SPECIFICATIONS AND CONTRACT DOCUMENTS

ALVA REGIONAL AIRPORT (AVK)

ALVA, OKLAHOMA

RUNWAY AND TAXIWAY REMARKING

Prepared For:

CITY OF ALVA, OKLAHOMA

MAY 2015

GARVER

GarverUSA.com

RUNWAY AND TAXIWAY REMARKING
GARVER PROJECT NO. 14071030
CITY OF ALVA, OKLAHOMA PROJECT NO. 14071030

I hereby certify that the applicable portions of this project plans and specifications were prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the State of Oklahoma.

SEAL AND SIGNATURE	APPLICABLE DIVISION OR PROJECT RESPONSIBILITY
Curtis Brown, P.E. Digitally Signed: 05/26/2015	Specifications: 010000 Advertisement for Bids 010200 Instructions to Bidders 010300 Bid Bond 010400 Proposal 010420 Statement of Bidder's Qualifications 010430 List of Manufacturers 010440 List of Proposed Subcontractors 010480 Bidder's Checklist of Required Items 010600 Contract 010700 Performance Bond 010720 Payment Bond 010800 General Conditions 010900 Special Conditions SS-101 Safety Plan Compliance Document (SPCD) SS-110 Standard Specifications SS-120 Site Preparation P-620 Runway and Taxiway Painting T-904 Sodding Plans: Sheet No. 1 – 23

000001 – CERTIFICATIONS

William B. Gilbreath, P.E. Digitally Signed 05/26/2015	Specifications: SS-300 Basic Electrical Requirements SS-301 Electrical Demolition and Relocation Work SS-310 Airport Lighting Systems L-108 Underground Power Cables for Airport Plans: Sheet No. 24 - 42

GARVER, LLC CERTIFICATE OF AUTHORIZATION:
OK SURVEYING AND ENGINEERING COA NO. CA4193, Expiration Date: 6/30/2016

CITY OF ALVA, OKLAHOMA

RUNWAY AND TAXIWAY REMARKING

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010000 - ADVERTISEMENT FOR BIDS

Sealed bids for ALVA REGIONAL AIRPORT (AVK) RUNWAY AND TAXIWAY REMARKING, to be constructed for CITY OF ALVA, OKLAHOMA, will be received at the City of Alva Clerk's Office, 415 4TH ST., Alva, Oklahoma 73717 until 3:00 p.m., TUESDAY, JUNE 23, 2015, at which time the bids shall be publicly opened and read aloud. Sealed bids submitted prior to the bid opening should be sent to City of Alva Clerk's Office.

The project includes, but is not limited to, the items listed below as shown on the plans and indicated in the specifications:

- Removal of painted numbers and markings for the south for 310 feet on the 36 end.
- Removal of painted numbers and marking for the north for 310 feet on the 18 end.
- Remarking of both 18 and 36 with new threshold markings and designation numbers.
- Removal of all markings, lead-in lines, and hold lines for Runway 17-35.
- Remarking of former Runway 17-35 to Taxiway, including continuous centerline, continuous edge markings, and shoulder markings to delineate a 35' wide taxiway.
- Painting of new taxiway fillets and intersection lines serving the new Taxiway A.
- Runway 18-36 Lighting relocation and rehabilitation.
- Deactivation of portions existing electrical circuits by physically severing the circuit at various locations.
- Removal of all runway lights on former Runway 17-35. Existing wire to be re-spliced and remain in service.
- Installation of new retro reflectors.

Bid documents (plans, specifications, proposal forms, and other contract documents) may be examined at 415 4TH ST., Alva, Oklahoma 73717, (580) 327-1340 or at the Alva Regional Airport, 2875 College Boulevard, Alva, Oklahoma 73717. Bid documents may be purchased only from the City of Alva Clerk's Office for fifteen dollars ($15.00) per digital set or thirty dollars ($30.00) per paper set, plus any shipping costs. NO REFUNDS will be made and no partial sets will be issued.

Proposals shall be accompanied by a cashier's or certified check upon a national or state bank in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the Owner, or a bid bond in the same amount from a reliable surety company, as a guarantee that the Bidder will enter into a contract and execute performance and payment bonds within ten (10) days after notice of award of Contract to him. Such bid guarantee shall be made payable to CITY OF ALVA, OKLAHOMA.

The successful bidder must furnish a performance and payment bond upon the form provided in the amount of one hundred per cent (100%) of the contract price from an approved surety company holding a permit from the State of Oklahoma to act as surety, or other surety or sureties acceptable to the Owner.

City of Alva, Oklahoma reserves the right to reject any or all bids, to waive irregularities in the bids and bidding deemed to be in the best interests of City of Alva, Oklahoma, and to reject nonconforming, nonresponsive, or conditional bids.

Bids must remain in effect for 60 days after the bid opening date.

City of Alva, Oklahoma

010200 - INSTRUCTIONS TO BIDDERS

1. PREPARATION OF BID

Each bid must be submitted on the prescribed form (Proposal) and Unit Price Schedule(s). All blank spaces must be filled in legibly (either typed or written with ink). All blank spaces for bid prices on the Unit Price Schedules must be filled in and the extended total for each item shall be entered in figures only. If the unit price and the extended total of any item are not in agreement, the unit price shall govern and the extended total is corrected to conform thereto. Erasures or other corrections on the Proposal form or Unit Price Schedules shall be initialed by the signer of the bid. All bids must be signed in ink by an individual authorized to bind the Bidder. All bids must be regular in every respect and no interlineations, excisions, or special conditions shall be made or included in the Proposal by the Bidder.

There are three (3) unit price schedule(s). Bidders must submittal on all schedules. Bidders must quote on all items within a specific schedule; failure to do so may disqualify the bid.

There must be a bid on all items that may appear on the Unit Price Schedule(s). No bid will be considered which covers only a part of the work. A conditional bid will not be considered.

The Proposal and Unit Price Schedule(s), along with other specific section items required in Section 17 below for the sealed bid, shall not be altered and these sections shall be submitted in their entirety. Submission must be at the place, and at or prior to the time specified in the Advertisement for Bids.

Each bid must be submitted in a sealed envelope clearly marked on the outside that it contains a bid for **Alva Regional Airport (AVK) Runway and Taxiway Remarking** and with the time and date of bid opening shown thereon. The name, address, and Oklahoma Contractor's License Number of the Bidder shall appear in the upper left-hand corner of the envelope. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope.

A bid that obviously is unbalanced may be rejected.

2. INTERPRETATIONS AND ADDENDA

No oral interpretation will be made to any Bidder as to the meaning of the Contract Documents or any part thereof. Every request for such an interpretation shall be made in writing to City of Alva Clerk's Office, 415 4TH ST., Alva, Oklahoma 73717. Any inquiry received forty-eight (48) hours prior to the opening of bids will be given consideration. Every interpretation made to a Bidder will be in the form of an Addendum to the contract Documents, and when issued, will be sent to the Plan Holders list located in the City of Alva Clerk's Office at least twenty-four (24) hours before bids are opened. It shall be the Bidder's responsibility to make inquiry to the City of Alva Clerk's Office as to the Addenda issued. All such Addenda shall become part of the Contract and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.

3. BIDDING DOCUMENTS

Complete sets of the bidding documents may be obtained as stated in the advertisement. Owner and Engineer, in making copies of these documents available, do so only for the purpose of obtaining bids for the work, and do not authorize or grant a license for any other use. Complete sets of the documents shall be used in preparing bids; neither the Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

4. INSPECTION OF SITE

Each Bidder shall visit the site of the proposed work and fully acquaint himself with the existing conditions there relating to construction and labor, and shall fully inform himself as to the facilities involved, laws and regulations, and the difficulties and restrictions in attending the performance of the Contract.

The Bidder shall thoroughly examine and familiarize himself with the Plans, Technical Specifications, other Contract Documents, and referenced items. The Bidder shall also carefully study all available reports of explorations and tests of subsurface conditions at or adjacent to the Site.

The Contractor, by the execution of the Contract, shall not be relieved of any obligation under it due to his failure to receive or examine any form or legal instrument or to visit the site and acquaint himself with the conditions there existing, and the Owner will be justified in rejecting any claim based on facts regarding which he should have been on notice as a result thereof.

It is the responsibility of each Bidder before submitting a bid to agree that the submission of a bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Contract Documents, that without exception the bid and all prices in the bid are premised upon performing and furnishing the work required by the Contract Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Contract Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the work.

5. BID GUARANTY

The bids must be accompanied by a Bid Guaranty, which shall not be less than five percent (5%), of the amount of the bid. At the option of the Bidder, the guaranty may be a certified check, or may be a Bid Bond that is similar to the attached form. No bid will be considered unless it is accompanied by the required guaranty. Certified check must be payable to the order of City of Alva, Oklahoma. Cash deposits will not be accepted. The Bid Guaranty shall insure the execution of the Agreement and the furnishing of the surety bond or bonds by the successful Bidder, all as required by the Contract Documents.

The guaranty of the apparent successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid Guaranty will be released. If the successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 10 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid Guaranty of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

The Bid Guaranty of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the effective date of the Contract or 61 days after the Bid opening, whereupon Bid Guaranty furnished by such Bidders will be released.
Bid Guaranty of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be returned upon request as soon as feasible after the opening of the bids.

6. COLLUSION; SUBCONTRACTS

A Bidder submitting a Proposal to the Owner for the work contemplated by the Documents on which bidding is based shall not collude with any other person, firm, or corporation in regard to any bid submitted.

Before executing any subcontract, the successful Bidder shall submit Section 010440, LIST OF PROPOSED SUBCONTRACTORS for prior approval of the Owner.

If requested by Owner, the list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity.

If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent successful Bidder to submit an acceptable substitute, in which case the apparent successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Award. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder.

If apparent successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in the General Conditions.

7. STATEMENT OF BIDDER'S QUALIFICATIONS

Each Bidder shall submit, on the form furnished for that purpose (a copy of which is included in the Contract Documents), a statement of the Bidder's qualifications, his experience record in construction of work similar to that which here is involved, and his organization and equipment available for the work contemplated; and when specifically requested by the Owner, a detailed financial statement. The Owner shall have the right to take such steps as it deems necessary to determine the ability of the Bidder to perform his obligations under the Contract and the Bidder shall furnish the Owner all such information and data for this purpose as it may request. The right is reserved to reject any bid where an investigation of the available evidence or information does not satisfy the Owner that the Bidder is qualified to carry out properly the terms of the Contract.

8. BALANCED BIDS; VARIATIONS IN QUANTITIES

The lump sum price and unit price for each of the several items in the Proposal of each Bidder shall be balanced and shall include its pro rata share of overhead.

The Owner shall have the right to increase or decrease the extent of the work, to change the location or gradient, or the dimensions of any part of the work, provided that the length of the improvement is not increased or decreased in excess of twenty-five percent (25%) of the length as determined by the Contract, or that the quantities of work to be done or the materials to be furnished are not increased or decreased in money value in excess of twenty-five percent (25%) of the total contract as determined by the Contract. Such changes shall not be considered as a waiver of any conditions of the Contract nor invalidate any of the provisions thereof. The Contractor shall perform the work as increased or decreased within the qualifying limits named and no allowance will be made for anticipated profits or increases or decreases so incurred. Change in length or in money value, within the twenty-five percent (25%) limits set out, shall not be cause for adjustment of any lump sum or unit price. Changes in items of work covered by unit prices and/or lump sum prices, within the twenty-five percent (25%) limits set out, shall not be cause for adjustment of any other (non-involved) lump sum or unit price.

Increases or decreases in items of work, and the cost thereof, shall be done in accordance with the Section entitled, CHANGES IN THE WORK under GENERAL CONDITIONS.

9. TIME FOR RECEIVING BIDS

A bid received prior to the advertised hour of opening will be kept securely and will remain sealed until the hour of opening. The officer whose duty it is to open them will decide when the specified time has arrived, and any bid received subsequent to that time will be returned unopened.

10. OPENING OF BIDS

At the time and place fixed for the opening of bids, the Owner will cause the bids to be opened and publicly read aloud, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative. Bid qualification may be evaluated before and/or after the bid opening, at the Owner's discretion.

11. WITHDRAWAL OF BIDS

Bids may be withdrawn on written request if the request is received prior to the time fixed for the opening of bids. Bidder may withdraw its Bid within 24 hours after Bids are open and Bid Guaranty will be returned if Bidder files a duly signed written notice with the Owner and promptly demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid. The Bidder shall not be allowed to submit a revised Bid.

12. AWARD OF CONTRACT; REJECTION OF BIDS

The Contract will be awarded to the responsive and responsible Bidder submitting the lowest total bid complying with the conditions of the Advertisement for Bids and other parts of these Contract Documents.

The criteria which will be used to determine the lowest responsive and responsible Bidder are as follows:

12.1 Responsive Bidder: Means a Bidder who has submitted a complete bid which conforms in all material respects and requirements to the Contract Documents.

12.2 Responsible Bidder: Means a Bidder who has the capacity and capability in all respects to perform fully the contract requirements and who has the integrity and reliability to assure good faith performance. Among factors to be considered in determining whether the Bidder meets these standards are the Bidder's financial responsibility, performance responsibility, technical feasibility, his equipment, and his past performance in completing similar work.

A Bidder's failure to submit a complete bid or required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

The Bidder to whom the award is made will be notified at the earliest possible date, but not later than sixty (60) days after the opening of bids. The Owner, however, reserves the right to reject any or all bids and to waive any informality in bids received whenever such rejection or waiver is in its interests. The Owner also reserves the right to consider as unqualified to do the work any Bidder who does not habitually perform with his own forces the major portions of such work as is involved in construction of these improvements.

13. EXECUTION OF CONTRACT; PERFORMANCE AND PAYMENT BOND

Subsequent to the award and within ten (10) days after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the Owner a Contract in the form included in the Contract Documents in such number of copies as the Owner may require.

Having satisfied all conditions of award as set forth elsewhere in these Documents, the successful Bidder shall, within the period specified above, furnish a surety bond in a penal sum not less than the amount of the Contract as awarded, as security for the faithful performance of the Contract, and for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted for labor, materials, tools, equipment, or services of any nature, including utility and transportation services employed or used by him in performing the work. Such bond shall be as included in the Contract Documents and shall bear the same date as, or a date subsequent to, that of the Agreement. The current power of attorney for the person who signs for any surety company shall be attached to such bond.

The failure of the successful Bidder to execute such Contract and to supply the required bond or bonds within ten (10) days after the prescribed forms are presented for signature, or within such extended period as the Owner may grant, based upon reasons determined sufficient by the Owner, shall constitute a default, and the Owner may either award the Contract to the next lowest responsible Bidder or re-advertise for bids.

14. BONDS AND INSURANCE

Attention of Bidders is called to the most current version of the Oklahoma Competitive Bidding Act., which has certain requirements pertaining to Performance Bonds, labor bonds, employer's liability insurance, public liability insurance, workmen's collective insurance, and property damage insurance.

All companies furnishing Bid Bonds and Performance Bonds shall furnish evidence of being on the U.S. Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Oklahoma.

15. CONTRACTOR'S LIABILITY INSURANCE REQUIREMENTS

The Bidder shall provide with the Proposal a listing of both automobile and personal liability insurance coverage currently in force, along with a copy of a Certificate of Insurance as verification of that coverage.

In the event the Owner determines that the low Bidder's coverage in force is inadequate, the Owner may require the low Bidder to procure additional coverage in accordance with the requirements as specified herein.

In the event the lower Bidder is unable, after diligent effort, to procure such additional coverage as may be required by the Owner, the Owner may provide such additional coverage, naming the Contractor as insured or, at the option of the Owner, reduce the amount of additional coverage required or waive any requirement for additional coverage.

16. THIRD PARTY COVERAGE

The Contractor shall provide insurance coverage for the Engineer and the Owner as indicated in Section 010800, GENERAL CONDITIONS.

17. SIGNATORY AND CONTRACT SUBMITTALS

The Contract Documents call for all Bidders, and for the awarded Contractor, to complete and/or submit information concerning equal employment opportunity, quality control, labor items, etc. A list of required items to be submitted with each bid is listed in the Bidders Checklist.

The following is a list of completed forms/submittals that the apparent low Bidder will be required to complete before execution and award of the contract:

- Contract (all pages)
- Performance Bond
- Payment Bond
- Certificates of Insurance and Insurance Policies

The following is a list of completed forms/submittals that the awarded Contractor will be required to submit before construction begins:

- Construction Schedule

Additional certifications and submittals will be required for construction materials and other items in the technical specifications.

18. LEGAL QUALIFICATIONS

All Bidders, in order to submit a bonafide Proposal, must comply with the applicable terms of Oklahoma Code.

The successful Bidder, if a corporation created under the laws of some state other than the State of Oklahoma, will be required to qualify, or to have qualified, with the Secretary of State of Oklahoma to do business in the State of Oklahoma.

19. MODIFICATION OF BID

No modification of any bid already submitted will be considered unless such modification is received in writing, signed and witnessed by persons authorized to so act on behalf of the bidder, prior to the time set for opening of bids.

END OF INSTRUCTIONS TO BIDDERS

010300 - BID BOND

1. BID DEFAULT

Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Contract required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

This obligation shall be null and void if:

1.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Contract required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

1.2 All Bids are rejected by Owner, or

1.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and consented to by Surety).

2. BOND PAYMENT DUE

Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

3. PROCEEDING REQUIREMENTS

Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed the time required by the Bidding Documents without Surety's written consent.

No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default is received by Bidder and Surety and in no case later than one year after the Bid due date. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

4. STATUTORY REQUIREMENTS

This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

5. BID BOND CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS:

THAT we the undersigned, _____

_____, as PRINCIPAL, and _____

_____, as SURETY, are held and firmly bound unto the City of Alva, Oklahoma, Alva, Oklahoma, hereinafter called the OWNER in the penal sum of

_____ Dollars

($_____), lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these Presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT WHEREAS, the Principal has submitted

the accompanying Contract, dated _____, for

"**ALVA REGIONAL AIRPORT (AVK) RUNWAY AND TAXIWAY REMARKING**"

NOW, THEREFORE, if the Principal shall not withdraw said Proposal within sixty (60) days after the opening of same, and shall within ten (10) days after the prescribed forms are presented to him for signature, enter into a written Contract with the Owner in accordance with the Proposal as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument, under their several

seals this _____ day of _____, 20___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representatives, pursuant to authority of its governing body.

SEAL

_____
Principal

Witness_____ By_____
Signature Signature

Witness_____ By_____
Print Name and Title Print Name and Title

_____

_____
Address

SEAL

_____
Surety

Witness_____ By_____
Signature Attorney-In-Fact - Signature

Witness_____ By_____
Print Name and Title Attorney-In-Fact - Print Name and Title

_____

_____
Address

NOTE: Power-of-attorney for person signing for surety company must be attached to bond.

010400 - PROPOSAL

Place _____

Date _____

Proposal of _____,

a corporation organized and existing under the laws of the State of _____,

or

Proposal of _____,

a partnership consisting of _____

or

Proposal of _____,

an individual doing business as _____,

To: City of Alva, Oklahoma

This bid results from your advertisement for bids for the construction of the **Alva Regional Airport (AVK) Runway and Taxiway Remarking.**

The undersigned Bidder, having visited the site of the work, having examined the Plans, Specifications, and other Contract Documents including all Addenda, and being familiar with all of the conditions relating to the construction of the proposed project, hereby agrees to comply with all other conditions or requirements set forth in the Plans, Specifications, and other Contract Documents, and further proposes to; furnish all material, supplies, equipment, and appliances; to furnish all labor, tools, equipment and incidentals to complete the work in accordance with the Plans, Specifications, and other Contract Documents at and for the lump sum and unit prices proposed in the attached Unit Price Schedule(s).

The undersigned Bidder agrees to begin work within ten (10) calendar days after the issuance by, or on behalf of, the Owner of a "Work Order" or "Notice to Proceed" and to complete the work within fifteen (15) working days thereafter (except as modified in accordance with the GENERAL CONDITIONS of these Contract Documents). Should the work fail to be completed within the time herein stated, the Contractor shall pay to the Owner, as fixed and agreed liquidated damages, and not as a penalty, the sum, for each day of delay until the work is completed and accepted, as stipulated in GENERAL CONDITIONS of these Contract Documents. It is understood that additional time for the completion of the project is to be allowed only for delays as stipulated in GENERAL CONDITIONS of these Contract Documents.

Basis of Award: The basis of award shall be the lowest combined aggregate of the following items as long as the combined aggregate is within the available project funding:

- Base Bid +
    - Either Additive Alternate 1 or Additive Alternate 2

ALVA REGIONAL AIRPORT (AVK)
RUNWAY AND TAXIWAY REMARKING
UNIT PRICES -SCHEDULE 1
BASE BID

ITEM NO.	SPEC. NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	BID AMOUNT
1	SS-120-3.1	SITE PREPARATION	LS	1		
2	SS-300-5.1	LOCKOUT/TAGOUT AND CONSTANT CURRENT REGULATOR CALIBRATION PROCEDURES	LS	1		
3	SS-301-5.1	EXISTING STAKE MOUNTED EDGE LIGHT - REMOVED	EA	99		
4	SS-301-5.2	EXISTING L-861E STAKE MOUNTED RUNWAY THRESHOLD LIGHT, RELOCATED	EA	12		
5	SS-310-5.3	L-861E STAKE MOUNTED RUNWAY THRESHOLD LIGHT, INSTALLED	EA	4		
6	L-108-5.1	TRENCHING FOR DIRECT-BURIED CABLE, 18 INCH MINIMUM DEPTH	LF	260		
7	L-108-5.2	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN TRENCH, DUCT BANK OR CONDUIT	LF	360		
8	L-108-5.3	NO. 6 AWG, SOLID, BARE COUNTERPOISE WIRE, INSTALLED IN TRENCH, ABOVE THE DUCT BANK OR CONDUIT, INCLUDING GROUND RODS AND GROUND CONNECTORS	LF	260		

Total Base Bid - Schedule 1 _____

Total Base Bid – Schedule 1 (Written Format)

$ _____

ALVA REGIONAL AIRPORT (AVK)
RUNWAY AND TAXIWAY REMARKING
UNIT PRICES -SCHEDULE 2
ALTERNATE 1

ITEM NO.	SPEC. NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	BID AMOUNT
1	SS-310-5.1	L-853 ELEVATED STAKE MOUNTED RETROREFLECTIVE MARKER, INSTALLED IN TURF	EA	40		
2	SS-310-5.2	L-853 ELEVATED SURFACE MOUNTED RETROREFLECTIVE MARKER, INSTALLED ON PAVEMENT	EA	84		
3	P-620-5.1	RUNWAY AND TAXIWAY PAINTING	SF	47,000		
4	P-620 5.2	RUNWAY AND TAXIWAY PAINT REMOVAL	SF	38,000		

Total Bid Alternate 1 - Schedule 2 _____

Total Bid Alternate 1 – Schedule 2 (Written Format)

$ _____

ALVA REGIONAL AIRPORT (AVK)
RUNWAY AND TAXIWAY REMARKING
UNIT PRICES -SCHEDULE 3
ALTERNATE 2

ITEM NO.	SPEC. NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	BID AMOUNT
1	P-620-5.1	RUNWAY AND TAXIWAY PAINTING	SF	20,300		
2	P-620 5.2	RUNWAY AND TAXIWAY PAINT REMOVAL	SF	8,650		

Total Bid Alternate 2 - Schedule 3 _____

Total Bid Alternate 2 – Schedule 3 (Written Format)

$ _____

Bidder acknowledges receipt of the following addendum (addenda):

_____ and _____

_____ and _____

_____ and _____

The undersigned Bidder agrees that this bid shall be good and shall not be withdrawn for a period of sixty (60) calendar days after the opening thereof. If written notice of the acceptance of this Proposal is mailed, telegraphed, or delivered to the undersigned within sixty (60) days after the opening thereof, or at any time thereafter before this Proposal is withdrawn, the undersigned agrees to execute and deliver an Agreement (Contract) in the prescribed form, and furnish the required Performance and Payment Bond, within ten (10) days after the Agreement is presented to him for signature.

It is understood by the undersigned Bidder that the Owner reserves the right to reject any or all bids.

Accompanying this Proposal as bid security is a certified check/bid bond (*strike one*)

in the amount of _____ Dollars ($_____), being not less than five percent (5%) of the total amount of the bid. If the undersigned Bidder is the successful Bidder, but fails or refuses to execute the contract and furnish the required bond within the prescribed ten (10) days of the notification of award, then this bid security is to become the property of the Owner as liquidated damages for the delay and additional expense to the Owner caused by such failure or refusal.

_____ _____

(Witness) (Name of Bidder)

_____ By _____

_____ _____

(Address) (Print Name and Title)

_____

_____

(Office Address of Bidder)

SEAL (If Bidder is a corporation)

NOTES: Sign in ink. Do not detach.
Items must be bid upon as specified in the Unit Price Schedule.

010420 - STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder.

2. Permanent main office address.

3. When organized.

4. If a corporation, where incorporated.

5. How many years have been engaged in the contracting business under your present firm or trade name?

6. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion).

7. General character of work performed by your company.

8. Have you ever failed to complete any work awarded to you?

9. Have you ever defaulted on a Contract?

   If so, where and why?

10. Have you ever been fined or had your license suspended by a Contractor's Licensing Board?

    If so, where and why?

11. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.

12. List your major equipment available for this Contract.

13. Experience in construction work similar in importance to this project.

14. Background and experience of the principal members of your organization, including the officers.

15. Background and experience of the Master Electrician(s) licensed in the state of Oklahoma who have proper skills in supervising, performing, and maintaining the electrical work.

16. Credit available: $_____.

17. Give Bank reference: _____.

18. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner?

19. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Owner, in verification of the recitals comprising this statement of Bidder's Qualifications.

20. The Bidder shall provide a brief description of any litigation or administrative proceeding of the following types, either pending or concluded within the preceding year, to which the Bidder (and the ultimate controlling person, if different from the Bidder) or any of its directors or executive officers was a party or of which the property of any such person is or was the subject; the names of the parties and the court or agency in which such litigation or proceeding is or was pending shall be given:

(a) Administrative or judicial proceedings of any state federal agency or authority concerning environmental violations;
(b) Proceedings which may have a material effect upon the solvency of the ultimate holding company, including but not necessarily limited to, bankruptcy and receivership; and
(c) Criminal proceedings.

Dated at _____ this _____ day of _____, 20____.

_____
(Name of Bidder)

By _____

Title _____

STATE OF _____)
) SS.
COUNTY OF _____)

_____being duly sworn deposes and says that he is

_____ of _____
(Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct. SUBSCRIBED AND SWORN TO BEFORE ME this _____ day of _____ _____, 20____.

_____
(Notary Public)

My Commission Expires:

_____

010430 – LIST OF MANUFACTURERS

Bid Form Attachment A
MANUFACTURER FORM

Specification Section	Equipment	Base Bid Equipment Manufacturer (Circle One)

010440 - LIST OF PROPOSED SUBCONTRACTORS

I, the undersigned General Contractor, hereby certify that proposals from the following Subcontractors were used in the preparation of my bid. I agree that if I am the successful Bidder and if the following subcontracts are approved, I will not enter into contracts with others for these divisions of the work without prior written approval from the Engineer and the Owner.

If the responses below do not clearly indicate that the contract goal for DBE participation has been achieved, documentation shall be attached to clearly demonstrate to the satisfaction of the Owner that a Good Faith Effort has been made as defined and described in Appendix A of 49 CFR Part 26. Firms qualified as a DBE for this project shall be certified by the Oklahoma DOT.

For Annual Gross Receipts:

- Enter 1 for Less than $1 Million
- Enter 2 for More than $1 Million, Less than $5 Million
- Enter 3 for More than $5 Million, Less than $10 Million
- Enter 4 for More than $10 Million, Less than $15 Million
- Enter 5 for More than $15 Million

Type of Work: .....

Subcontractor's Name: .....

Oklahoma License No.: .....

Address: .....

DBE: Yes / No (circle one) Contract Amount: .....

Date Firm Established: .....

Annual Gross Receipts (enter the range only): .....

Type of Work: .....

Subcontractor's Name: .....

Oklahoma License No.: .....

Address: .....

DBE: Yes / No (circle one) Contract Amount: .....

Date Firm Established: .....

Annual Gross Receipts (enter the range only): .....

Type of Work: .....

Subcontractor's Name: .....

Oklahoma License No.: .....

Address: .....

DBE: Yes / No (circle one) Contract Amount: .....

Date Firm Established: .....

Annual Gross Receipts (enter the range only): .....

Type of Work: .....

Subcontractor's Name: .....

Oklahoma License No.: .....

Address: .....

DBE: Yes / No (circle one) Contract Amount: .....

Date Firm Established: .....

Annual Gross Receipts (enter the range only): .....

Bidder (General Contractor): .....

Oklahoma License No.: .....

Address: .....

DBE: Yes / No (circle one)

Date Firm Established: .....

Annual Gross Receipts (enter the range only): .....

By: .....*

Title: .....

Percent of Contract to be Completed by DBE: .....

*Signature must be the same as on the Proposal form.

Notes:

(1) This form must be completed and submitted at the time of the bid opening.

(2) General contractor and subcontractors shall have a certificate of license with the proper classification from the State Contractors Licensing Board before his or her bid is submitted.

(3) Certificates of license shall be provided with this form at the time of the bid opening.

010480 - BIDDER'S CHECKLIST OF REQUIRED ITEMS

This Bidder's Checklist is provided to ensure all required forms are completed and returned as part of the bid submission. All forms must be included as indicated for a bid to be considered a complete, responsive bid. Appropriate signatures and date are required on each document. If an item is missing, the bid may be declared unresponsive and therefore rejected. **This sheet will serve as the cover sheet for the bid submission.**

Spec. Section	Description	Completed*
	Acknowledgement of All Addenda	☐
	Bid contains the following forms:	
010200	1. Insurance Coverages (Current Auto and Liability Insurance)	☐
010300	2. Bid Bond	☐
010400	3. Proposal (including Unit Price Schedule(s) – if applicable)	☐
010420	4. Statement of Bidder's Qualifications	☐
010440	5. List of Proposed Subcontractors	☐

*Check when filled out, signed, and included with submission of bid packet.

Within three (3) days after Bid Opening:
Bidder acknowledges to provide within three (3) days after Bid Opening (Low Bidder and Second Low Bidder Only):

1. Bidder's Qualifications of Subcontractor (if requested)

010430 2. List of Manufacturers (if applicable)

Within ten (10) days after Notice of Award:
Bidder acknowledges that within ten (10) days after Notice of Award, Successful Contractor is required to complete the following before execution and award of the contract:

010600 1. Contract (all pages and supporting documents)
010700 2. Performance Bond
010720 3. Payment Bond
010900 4. Maintenance Bond (if applicable)
5. Statutory Bond (if applicable)
010800 6. Completed Certificates of Insurance

Prior to Construction:
Contractor required to submit Construction Schedule before construction begins.

Seal (if incorporated)

Bidder Name: _____

Address: _____

City, State, Zip Code: _____

Contractor Number: _____

Contact Name: _____

Title: _____

Contact Number: _____

Contact Email: _____

Signature of Authorized Agent for Bidder: _____

Date: _____

010600 - CONTRACT

THIS AGREEMENT made this _____ day of _____, _____, by and between _____ a Corporation organized and existing under the laws of the State of _____ hereinafter called the "Contractor", and City of Alva, Oklahoma, hereinafter called the "Owner".

W I T N E S S E T H:

That the Contractor and the Owner for the consideration stated herein mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment, incidentals and services, including utility and transportation services and perform and complete all work required for the construction of **Alva Regional Airport (AVK) Runway and Taxiway Remarking** in strict accordance with the Contract Documents.

ARTICLE 2. The Contract Price. The Owner will pay the Contractor, because of his performance of the Contract, for the total quantities of work performed at the lump sum and unit prices stipulated in the Proposal FOR SCHEDULE(S) _____ subject to additions, and deductions as provided in the Section entitled "CHANGES IN THE WORK" under GENERAL CONDITIONS.

ARTICLE 3. Contract Time. The Contractor agrees to begin work within ten (10) calendar days after issuance by the Owner of a "Work Order" or "Notice to Proceed" and to complete the work within fifteen (15) working days thereafter (except as modified in accordance with the GENERAL CONDITIONS of these Contract Documents). If the Contractor shall fail to complete the work within the time specified, he and his Surety shall be liable for payment to the Owner, as liquidated damages ascertained and agreed, and not in the nature of a penalty, the amount specified in GENERAL CONDITIONS of these Contract Documents for each day of delay. To the extent sufficient in amount, liquidated damages shall be deducted from the payments to be made under this Contract.

ARTICLE 4. Contract. The executed Contract Documents shall consist of the following:

a. Executed Contract
b. Addenda (if any)
c. Advertisement for Bids
d. Instructions to Bidders
e. Proposal
f. Statement of Bidder's Qualifications
g. List of Proposed Subcontractors
h. Performance and Payment Bonds
i. General Conditions
j. Special Conditions
k. Technical Specifications
l. Drawings
m. Certificates of Insurance and Insurance Policies

This Contract together with other Documents enumerated in this Article 4, which said other Documents are as fully a part of the Contract Documents as if hereto attached or herein repeated, form the Contract between the parties hereto. In the event that any provisions in any component part of this Contract conflicts with any provision of any other component part, the conflict shall be resolved by the Engineer whose decision shall be final.

ARTICLE 5. Surety. The Surety on the Performance and Payment Bonds shall be a surety company of financial resources satisfactory to the Owner, authorized to do business in the State of the Project, and shall comply with applicable state laws.

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed in four (4) counterparts, each of which shall be considered an original on the day and year first written.

_____
(Contractor)

ATTEST:_____ By_____

Title:_____

_____
(Street)

_____
(City)

_____
City of Alva, Oklahoma

ATTEST:_____ By _____

_____Title:_____
(Print the names underneath all signatures)

010700 - PERFORMANCE BOND

1. NOTIFICATION

The Surety's obligation under this Bond shall arise after:

1.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Default. Such notice shall indicate that the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. Unless the Owner agrees otherwise, any conference requested under this Paragraph shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

1.2 The Owner declares a Default, terminates the Construction Contract and notifies the Surety.

Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Failure on the part of the Owner to comply with the notice requirement shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations.

The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

2. SURETY'S ACTIONS

When the Owner has satisfied the conditions of Paragraph 1, the Surety shall promptly and at the Surety's expense take one of the following actions:

2.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

2.2 Undertake to perform and complete the Construction Contract itself, through its mutually acceptable agents or independent contractors;

2.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

2.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

2.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

2.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

3. SURETY OBLIGATIONS

If the Surety elects to act under Paragraph 2.1, 2.2, or 2.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

3.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

3.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 2; and

3.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

4. SURETY DEFAULT

If the Surety does not proceed as provided in Paragraph 2 with reasonable promptness, the Surety shall be deemed to be in default on this Bond ten days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 2.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

5. PROCEEDINGS

Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

6. STATUTORY REQUIREMENTS

When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted hereto and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

7. PERFORMANCE BOND CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____

as Principal, hereinafter called "Principal", and _____

_____, State of _____, as

Surety, hereinafter called "Surety", are held and firmly bound unto the City of Alva, Oklahoma, Alva, Oklahoma, as Obligee, hereinafter called "Owner", in the amount of:

_____

_____ Dollars ($_____),
in lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Principal entered into a Contract with the Owner by written agreement dated the day of _____, 20___, a copy of which is attached hereto and made a part hereof, hereinafter referred to as the Contract,

"**Alva Regional Airport (AVK) Runway and Taxiway Remarking**"

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract, including without limitation the maintenance warranty thereof, during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

Any alterations which may be made in the terms of the Contract, or in the work to be done under it, or the giving by the Owner of an extension of time for the performance of the Contract, or any other forbearance on the part either of the Owner or the Principal to the other shall not release in any way the Principal and Surety, or either of these, their heirs, personal representatives, successors, or assigns from their liability hereunder, notice to the Surety of any alteration, extension or forbearance hereby being waived.

In no event shall the aggregate liability of the Surety exceed the sum set out herein.

This bond is executed pursuant to the terms of Oklahoma Competitive Bidding Act.

Executed on this _____ day of _____, 20___.

SEAL

_____
Principal

By _____
Signature

By _____
Print Name and Title

SEAL

_____
Surety

By _____
Attorney-In-Fact - Signature

By _____
Attorney-In-Fact - Print Name and Title

Surety Address for giving Notices: -

_____

_____

NOTES: Attach Power of Attorney.

Date of Bond must not precede date of Contract.

A copy of this Bond must be filed with the Circuit Clerk in each county wherein the work is to be performed.

010720 - PAYMENT BOND

1. NOTIFICATION

The Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in the Bond Certificate) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations. When the Owner has made notification, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

The Surety's obligations to a Claimant under this Bond shall arise after Claimants have furnished a written notice of non-payment to the Contractor, Surety, or Owner, stating with substantial accuracy the amount claimed and the name of the party to whom the materials, labor, or equipment was furnished or supplied. It is sufficient if a notice of non-payment is given to the Contractor by the Owner.

2. SURETY'S OBLIGATION

When a Claimant has satisfied the conditions of Paragraph 1, the Surety shall promptly and at the Surety's expense take the following actions:

2.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

2.2 Pay or arrange for payment of any undisputed amounts.

2.3 The Surety's failure to discharge its obligations under Paragraph 2.1 or 2.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 2.1 or 2.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

3. DEDICATION OF BOND FUNDS

Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

4. OTHER OBLIGATIONS

The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make

payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

5. PROCEEDINGS

No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

6. STATUTORY REQUIREMENTS

When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted hereto and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

7. PAYMENT BOND CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____

as Principal, hereinafter called "Principal", and _____

_____, State of _____, as

Surety, hereinafter called "Surety", are held and firmly bound unto the City of Alva, Oklahoma, Alva, Oklahoma, as Obligee, hereinafter called "Owner", in the amount of:

_____

_____ Dollars ($_____),
in lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Principal entered into a Contract with the Owner by written agreement dated the day of _____, 20___, a copy of which is attached hereto and made a part hereof, hereinafter referred to as the Contract,

"**Alva Regional Airport Runway and Taxiway Remarking**"

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and

for all labor performed in such work, whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

Any alterations which may be made in the terms of the Contract, or in the work to be done under it, or the giving by the Owner of an extension of time for the performance of the Contract, or any other forbearance on the part either of the Owner or the Principal to the other shall not release in any way the Principal and Surety, or either of these, their heirs, personal representatives, successors, or assigns from their liability hereunder, notice to the Surety of any alteration, extension or forbearance hereby being waived.

In no event shall the aggregate liability of the Surety exceed the sum set out herein.

This bond is executed pursuant to the terms of the Oklahoma Competitive Bidding Act.

Executed on this _____ day of _____, 20___.

SEAL

_____
Principal

By _____
Signature

By _____
Print Name and Title

SEAL

_____
Surety

By _____
Attorney-In-Fact - Signature

By _____
Attorney-In-Fact - Print Name and Title

Surety Address for giving Notices: _____

_____

NOTES: Attach Power of Attorney.

Date of Bond must not precede date of Contract.

A copy of this Bond must be filed with the Circuit Clerk in each county wherein the work is to be performed.

010800 - GENERAL CONDITIONS

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GC.1 DEFINITIONS

Wherever used in any of the Contract Documents, the following meanings shall be given to the terms herein defined:

(1) "Addendum" means any change, revision, or clarification of the Contract Documents which has been duly issued by the Owner, or the Engineer, to prospective Bidders prior to the time of receiving bids.

(2) "Award" means the acceptance by the owner of the successful bidder's proposal.

(3) “Balance of the Contract Price” means the total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

(4) "Bidder" means any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

(5) "Working Days" A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor’s control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor’s forces engage in regular work will be considered as working days.

(6) "Change Order" means a written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the scope of work affected by the change. The work covered by the change order shall be within the scope of the contract.

(7) "Claim" means (a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer’s decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer’s decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

(8) "Contract" means the Contract executed by the Owner and the Contractor of which these GENERAL CONDITIONS form a part.

(9) "Contract Documents" means and shall include, but not be limited to, the following: Executed Contract, Addenda (if any), Advertisement For Bids, Instructions to Bidders, Statement of Bidders Qualifications, List of Proposed Subcontractors, Proposal, Performance-Payment Bond, General Conditions, Special Conditions, Technical Specifications, and Drawings.

(10) "Contractor" means the person, firm, or corporation entering into the Contract with the Owner to construct and install the improvements embraced in this project.

(10) “Default” means the failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Contract Documents.

(11) “Defective” means Work that is unsatisfactory, faulty, or deficient in that it does not conform to the

Contract Documents, or does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to Engineer's recommendation of final payment.

(11) "Engineer" means the Owner or any other person or persons employed by said Owner to furnish engineering services in connection with the construction embraced in the Contract.

(12) "Local Public Agency" or "Owner" means the City of Alva, Oklahoma, which is authorized to undertake this Contract.

(13) "Plans" or "Drawings" means the official drawings or exact reproductions which show the location, character, and details of the work contemplated, and which are to be considered part of the contract, supplementary to the specifications.

(14) "Proposal" means the written offer of the Bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the Plans and Specifications.

(15) "Specifications" means a part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials, or testing, which are sited in the specifications by reference shall have the same force and effect as if included in the contract physically.

(16) "Subcontractors" shall mean the individual, partnership or corporation entering into an agreement with the Contractor to perform any portion of the work covered by the Plans and Specifications.

(17) "Surety" shall mean any person, firm, or corporation that has executed, as Surety, the Contractor's Performance Bond securing the performance of the Contract.

(18) "Technical Specifications" means that part of the Contract documents which describes, outlines and stipulates the quality of the materials to be furnished; the quality of workmanship required; and the controlling requirements to be met in carrying out the construction work to be performed under this Contract. This also includes Special Provisions.

(19) "Work" shall mean the furnishing of all necessary labor, tools, equipment, appliances, supplies, and material other than materials furnished by the Owner as specified to complete the construction covered by the Plans and Specifications.

(20) "Substantial Completion" shall mean the completion of the project to the extent that all component parts are suitable for their intended use and the final punch list has been completed. The Owner, at his or her sole discretion, may waive punch list items required for substantial completion.

GC.2 SUPERINTENDENCE BY CONTRACTORS

Except where the Contractor is an individual and gives his personal superintendence to the work, the Contractor shall provide a competent superintendent, satisfactory to the Owner and the Engineer, on the work at all times during working hours with full authority to supervise and direct the work and who shall be the Contractor's agent responsible for the faithful discharge of the Contractor's obligations under the Contract. During working hours, the Contractor's superintendent shall be equipped with a mobile phone or other communication device suitable to the Engineer for contact by the Engineer or Owner.

The Owner shall have the authority to require the Contractor to remove from the work any incompetent or insubordinate superintendent.

GC.3 CONTRACTOR'S EMPLOYEES

The Contractor shall employ only competent skillful workers and shall at all times enforce strict discipline and

good order among the employees.

The Contractor shall neither permit nor suffer the introduction or use of alcoholic beverages or controlled substances upon or about the work embraced in this Contract.

The Owner may require the Contractor to dismiss from the work such employee or employees as the Owner or the Engineer may deem incompetent, careless, or insubordinate.

GC.4 SAFETY

The Contractor shall be responsible for the safety of all persons on the Site who may be affected during the progress of the work as well as the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage to persons or property which may result from their failure or their improper construction, maintenance, or operation. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

GC.5 SUBCONTRACTS

The Contractor is responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by the subcontractors and is aware that nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner.

GC.6 OTHER CONTRACTS

The Owner may award, or may have awarded other Contracts for additional work, and the Contractor shall cooperate fully with such other contractors, by scheduling his own work with that to be performed under other Contracts as may be directed by the Owner. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor as scheduled.

GC.7 BOND

Coincident with the execution of the Contract, the Contractor shall furnish a good and sufficient surety bond, in the full amount of the Contract sum, guaranteeing the faithful performance of all covenants, stipulations, and agreements of the Contract, the payment of all bills and obligations arising from the execution of the Contract, (which bills or obligations might or will in any manner become a claim against the Owner), and guaranteeing the work included in this Contract against faulty materials and/or poor workmanship for one (1) year after the date of completion of Contract.

All provisions of the bond shall be complete and in full accordance with Statutory requirements. The bond shall be executed with the proper sureties through a company licensed and qualified to operate in the state and approved by the Owner. The issuing agent's power of attorney shall be attached to the bond and the bond shall be signed by an agent resident in the state and date of bond shall be the date of execution of the Contract. If at any time during the continuance of the Contract the surety on the Contractor's bond becomes irresponsible, the Owner shall have the right to require additional and sufficient sureties which the Contractor shall furnish to the satisfaction of the Owner within ten (10) days after notice to do so. In default thereof, the Contract may be suspended and all payments or money due the Contractor withheld.

GC.8 CONTRACTOR'S INSURANCE

Contractor shall obtain insurance of the types and in the amounts described below. The insurance shall be written by insurance companies and on forms acceptable to Owner.

Owner and Garver, LLC shall be included as an insured under the CGL, (using ISO Additional Insured Endorsement CG 20 10 11 85 or a substitute providing equivalent coverage), and under the commercial automobile liability (using ISO Additional Insured Endorsement CA 2048 or a substitute providing equivalent coverage), and commercial umbrella, if any. This insurance, including insurance provided under the commercial umbrella, if any, shall apply as primary and non-contributory insurance with respect to any other insurance or self-insurance programs afforded to, or maintained by, Owner.

GC.8.1 Commercial General and Umbrella Liability Insurance

Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance, with a limit of not less than $5,000,000 each occurrence. If such CGL insurance contains a general aggregate limit, it shall apply separately to the Project.

CGL insurance shall be written on ISO occurrence form CG 20 10 (11-85) (or a substitute combination of the following forms CG 20 10 (10-01) and CG 20 37 (10-01) providing equivalent coverage) and shall cover liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury and liability assumed under an insured contract.

There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from pollution, explosion, collapse, underground property damage, or amending the contractual coverage in the ISO occurrence form.

CGL insurance shall be written with an ISO form CG 25 03 05 09 (name of form below) or a substitute form providing equivalent coverage:

DESIGNATED CONSTRUCTION PROJECT(S) GENERAL AGGREGATE LIMIT

GC.8.2 Continuing CGL Coverage

Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella liability insurance, with a limit of not less than $5,000,000 each occurrence for at least 3 years following substantial completion of the Work.

Continuing commercial umbrella coverage, if any, shall include liability coverage for damage to the insured's completed Work equivalent to that provided under ISO form CG 00 01.

GC.8.3 Commercial Auto and Umbrella Liability Insurance

Contractor shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit of not less than $1,000,000 each accident.

Such insurance shall cover liability arising out of any auto (including owned, hired and non-owned autos).

Commercial auto coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 12, CA 00 20, or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in the 1990 and later editions of CA 00 01.

If the Contract Documents require Contractor to remove and haul hazardous waste from the Project site, or if the Project involves such similar environmental exposure, pollution liability coverage equivalent to that provided under the ISO Pollution Liability-Broadened Coverage for Covered Autos Endorsement (CA 99 48) shall be provided, and the Motor Carrier Act Endorsement (MCS 90) shall be attached.

GC.8.4 Workers' Compensation Insurance

Contractor shall maintain workers' compensation and employer's liability insurance.

The employer's liability, and if necessary commercial umbrella, limits shall not be less than $500,000 each accident for bodily injury by accident or $500,000 each employee for bodily injury by disease.

If Contractor leases its employees, the alternate employer endorsement (WC 00 03 01 A) shall be attached showing Owner in the schedule as the alternate employer.

Where applicable, U.S. Longshore and Harborworkers Compensation Act Endorsement shall be attached to the policy.

Where applicable, Nonappropriated Fund Instrumentalities Act (NFIA) shall be attached to the policy. NFIA extends the coverage of the Longshore and Harbor Workers' Compensation Act to civilian employees working on United States military bases throughout the world who are not paid with funds appropriated by Congress. These employees, working in facilities operated for the comfort, contentment, and improvement of armed forces personnel, are instead compensated with funds generated from earnings of their facility.

Where applicable, Outer Continental Shelf Lands Act Endorsement shall be attached to the policy.

Where applicable, the Maritime Coverage Endorsement shall be attached to the policy.

If project is located in a state where workers compensation is secured via monopolistic state funds, include evidence of the "Stop Gap" endorsement to the general liability policy.

GC.8.5 Property Insurance

If applicable, Contractor shall purchase and maintain property insurance for the Work. Such insurance shall be written in an amount at least equal to the initial contract sum as well as subsequent modifications of that sum. The insurance shall apply on a replacement cost basis. If the insurance obtained in compliance with this paragraph is builders risk insurance, coverage shall be written on a completed value form.

The property insurance as required above shall name as insureds the Owner, Contractor, and all subcontractors and sub-subcontractors on the Project.

GC.8.6 Primary and Non-contributory

Contractor agrees that the insurance listed above, including insurance provided under the commercial umbrella, if any, shall apply as primary and non-contributory insurance with respect to any other insurance or self-insurance programs afforded to, or maintained by, Owner.

GC.8.7 Waiver of Subrogation

Contractor waives all rights against the Owner and Garver, LLC and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the commercial general liability, commercial umbrella liability insurance, automobile liability insurance and workers compensation insurance maintained pursuant to paragraph GC.8 of this agreement.

GC.8.8 No Implied Waiver

Contractor shall furnish certifications matching the coverage requirements. Failure of Owner or Engineer to demand such certificate or other evidence of full compliance with these insurance requirements or failure of Owner or Engineer to identify a deficiency from evidence that is provided shall not be construed as a waiver

of the contractors obligations to furnish and maintain such insurance, or as a waiver to the enforcement of any of the provisions at a later date.

Any waiver of the contractor's obligation to furnish such certificate or maintain such evidence must be by written change order and signed by a Managing Member (Officer) of the Engineer and the Owner.

GC.8.9 Cancellation, Non-Renewal, and/or Impairment Notification

The Contractor shall not cause any insurance policy to be cancelled or permit it to lapse and all insurance policies shall include an endorsement to the effect that the insurance policy or certificate shall not be subject to cancellation or to a reduction in the required limits of liability or amounts of insurance until notice has been mailed to the Owner and Engineer, stating the date when such cancellation or reduction shall be effective, which date shall not be less than (60) days after such notice.

Notice shall be sent via email and regular mail to the following persons and addresses:

Owner:
City of Alva Clerk's Office
415 4TH St.
Alva, Oklahoma 73717
(580) 327-1340

Garver:

Curtis Brown, PE
1016 24th Ave. NW
Norman, Oklahoma 73069
CTBrown@GarverUSA.com

GC.9 SAMPLE CERTIFICATE OF LIABILITY INSURANCE

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
(must be dated)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Agency Name Agency Address www.stephens.com	CONTACT NAME: Agency contact PHONE (A/C, No, Ext): Agency ph# FAX (A/C, No): E-MAIL ADDRESS: Agency contact email address INSURER(S) AFFORDING COVERAGE NAIC # INSURER A : Carrier Name (AM Best Rating) INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :
INSURED Named Insured on the policies	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY							
	✓ COMMERCIAL GENERAL LIABILITY	X	X	XXXXXXXXXX			EACH OCCURRENCE	$ 5,000,000
	CLAIMS-MADE ✓ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 300,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 5,000,000
	POLICY ✓ PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 5,000,000
								$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	✓ ANY AUTO	X	X	XXXXXXXXXXX			BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	✓ HIRED AUTOS / ✓ NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
								$
	✓ UMBRELLA LIAB ✓ OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE	X	X	XXXXXXXXXX			AGGREGATE	$
	DED RETENTION $ XXXXX			Umbrella / Excess only if needed to meet the required underlying General Liability limit				$
								$
								$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						✓ WC STATU-TORY LIMITS / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N / A		X	XXXXXXXXXXX			E.L. EACH ACCIDENT	$ 500,000
	(Mandatory in NH)						E.L. DISEASE - EA EMPLOYEE	$ 500,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - POLICY LIMIT	$ 500,000
				XXXXXXXXXXX				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Owner & Garver, LLC shall be included as an Additional Insured by endorsement #CG2010(11/85) on the General Liability and #CA2048 on the Automobile and Umbrella or substitute endorsement providing equivalent coverage. Coverage shall be Primary and non-contributory with respect to any other insurance or self-insurance programs afforded to the Owner and Garver LLC. Waiver of Subrogation applies in favor of the Owner and Garver LLC on all policies. 60 day notice will be provided to the Owner and Garver LLC in the event of cancellation, non-renewal and/or impairment of the Contractor's policies .

CERTIFICATE HOLDER	CANCELLATION
Owner and Garver LLC	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE (must be signed by the Contractor's Insurance Agent)

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GC.10 CONTRACTOR'S AND SUBCONTRACTOR'S INDEMNIFICATION PROVISION

(1) INDEMNIFICATION: The CONTRACTOR and/or SUBCONTRACTOR shall indemnify and hold harmless the OWNER, ENGINEER, ENGINEER'S Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss, or damage (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by a negligent act or omission of the Contractor, any Subcontractor or Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work.

(2) NO LIMITATION UPON LIABILITY: In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative or such employee) of CONTRACTOR, any Subcontractor or Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish an of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph (1) shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefits acts or other employee benefit acts.

(3) ENGINEER/ARCHITECT EXCLUSION: The indemnification obligations of CONTRACTOR under paragraph (1) shall not extend to the liability of ENGINEER and ENGINEER'S Consultants, officers, directors, employees, or agents caused by the professional negligence, errors, or omissions of any of them, arising out of: the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications.

GC.11 FITTING AND COORDINATION OF THE WORK

The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, Subcontractors, or materialmen engaged upon this Contract. He shall be prepared to guarantee to each of his Subcontractors the locations and measurements which they may require for the fitting of their work to all surrounding work.

GC.12 KNOWLEDGE OF CONDITIONS

The Contractor states that he has examined all the available records and has made a field examination of the site and right-of-way and that he has informed himself about the character, quality, and quantity of surface and subsurface materials and other conditions to be encountered; the quantities in various sections of the work; the character of equipment and facilities needed for the prosecution of the work; the location and suitability of all construction materials; the local labor conditions; and all other matters in connection with the work and services to be performed under this contract.

GC.13 MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts of neglect or through failure to comply with any applicable Government regulations by the Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the work, the Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration, if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against the Owner on account of any damage alleged to have been so sustained, the Owner will notify this Contractor, who shall defend at his own expense any suit based upon such claim, and, if any judgment or claims against the Owner shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith.

GC.14 PAYMENT TO CONTRACTOR

Submit Applications for Payment to Architect/Engineer in accord with the schedule established in the Agreement for Construction between the Owner and the Contractor.

1. The application for payment shall be submitted typewritten on AIA Document G702™-1992 and G703™-1992, or approved equal. Attachments to the application for payment shall be the following:

    a. Stored Materials Invoice Tabulation Sheet.

    b. Invoices for Stored Materials.

    c. Contractor's Affidavit.

2. Application Form (AIA G702™-1992):

    a. Fill in required information, including that for change orders executed prior to the date of submittal of application.

    b. Fill in summary of dollar values to agree with the respective totals indicated on the continuation sheets.

    c. Execute certification with the signature of a responsible officer of the contract firm.

3. Continuation Sheets (AIA G703™-1992):

    a. Fill in total list of all scheduled component items of work, with item number and the scheduled dollar value for each item.

    b. Fill in the dollar value in each column for each scheduled line item when work has been performed. Round off values to nearest dollar.

    c. List each change order executed prior to the date of submission, at the end of the continuation sheets. List by change order number, and description, as for an original component item of work.

A cut-off time shall be established near the last day of the month such as to allow sufficient time for the application to be prepared, approved by the Contractor, and submitted by the Engineer to the Owner by the first day of the successive month.

The amount of the payment due to the Contractor shall be determined by the total value of work completed to date, deducting five percent (5%) for retainage (to assure faithful performance of the contract), adding the value of submitted paid invoices covering construction materials, properly stored on the site or in a bonded warehouse, and deducting the amount of all previous payments.

If the project has specific phased construction work in which completion can occur on a partial occupancy, the five percent (5%) retainage value shall be in direct proportion to that phase or part of the capital improvement project. Any proportional retainage withheld in this manner shall be released within thirty (30) days of completion of that phase of the project.

The total value of work completed to date shall be based on the estimated quantities of work completed and on the unit and lump sum prices contained in the Proposal. The value of materials properly stored on the site or in a bonded warehouse shall be based upon the estimated quantities of such materials and the invoice prices. Copies of paid invoices, covering construction materials for which material payments are made, shall

be furnished to the Engineer before such material payments are made.

Note: It has been the policy of the Owner to make payments for properly stored materials/equipment based upon invoice price and allow the Contractor to submit paid invoices within 30 days (or the next partial payment period). If paid invoices are not provided within the time allowed, then the materials/equipment so paid for will be removed from the next partial payment.

Monthly or partial payments made by the Owner to the Contractor are monies advanced for the purpose of assisting the Contractor to expedite the work of construction. All material and complete work covered by such monthly or partial payments shall remain the property of the Contractor, and he shall be responsible for the care and protection of all materials and work upon which payments have been made. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in this Contract complete and satisfactory to the Owner in all details.

GC.14.1 Withholding Payments

The Owner may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the Owner and if it so elects may also withhold any amounts due from the Contractor to any Subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Owner and will not require the Owner to determine or adjust any claims or disputes between the Contractor and his Subcontractors or material dealers, or to withhold any monies for their protection unless the Owner elects to do so. The failure or refusal of the Owner to withhold any monies from the Contractor shall not impair the obligations of any Surety or Sureties under any bond or bonds furnished under this Contract. Such withholding may also occur as a result of the Contractor's failure or refusal to prosecute the work with such diligence as will insure its completion within the time specified in these Contract Documents, or as modified as provided in these Contract Documents, or if the Contractor fails to comply with any applicable regulations promulgated by the U.S. Government or any other Government agencies.

GC.14.2 Final Payment

After final inspection and acceptance by the Owner of all work under the Contract, the application for final payment including retainage shall be prepared which shall be based upon the carefully measured or computed quantity of each item of work at the applicable unit and lump sum prices stipulated in the Unit Price Schedule. The total number of the final payment due the Contractor under this Contract shall be the amount computed as described above less all previous payments. All prior payments shall be subject to correction in the final payment. Final payment to the Contractor shall be made within thirty (30) days after the construction contract has been completed, subject to his furnishing the Owner with a release in satisfactory form of all claims against the Owner arising under and by virtue of his Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation and the release as provided under the section entitled DISPUTES under GENERAL CONDITIONS.

The Owner, before paying the final estimate, may require the Contractor to furnish releases or receipts from all Subcontractors having performed any work and all persons having supplied materials, equipment (installed on the Project), and services to the Contractor, if the Owner deems the same necessary in order to protect its interest. The Owner, however, may, if it deems such action advisable, make payment in part or in full to the Contractor without requiring the furnishing of such releases or receipts and any payments so made shall not impair the obligations of any Surety or Sureties furnished under this Contract.

Withholding of any amount due the Owner under the section entitled LIQUIDATED DAMAGES FOR DELAY under GENERAL CONDITIONS, shall be deducted from the payments due the Contractor.

All equipment warranties and general guarantee and maintenance bond provisions shall become effective for one year upon date of final acceptance of the completed project by the Owner.

GC.14.3 Payments Subject to Submission of Certificates

Each payment to the Contractor by the Owner shall be made subject to submission by the Contractor of all written certifications required of him.

GC.15 USE OF COMPLETED PORTIONS

The Owner shall have the right to use any completed or partially completed portion of the work and such use shall not be considered as an acceptance of any work.

GC.16 CHANGES IN THE WORK

The Owner may make changes in the scope of the work required to be performed by the Contractor under the Contract or make additions thereto, or omit work therefrom without invalidating the Contract, and without relieving or releasing the Contractor from any of his obligations under the Contract or any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of the Guaranty Bonds, and without relieving or releasing the Surety or Sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is expressly provided otherwise.

Except for the purpose of affording protection against any emergency endangering life or property, the Contractor shall make no change in the materials used or in the specified manner of constructing and/or installing the improvements, or supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless in pursuance of a written order from the Owner authorizing the Contractor to proceed with the change. No claim for an adjustment of the Contract price will be valid unless so ordered.

After the work is complete, a final change order may be prepared to be accepted by the Owner and Contractor to adjust final payment as required to cover the actual units of work acceptably completed.

If the applicable unit prices are contained in the Proposal (established as a result of either a unit price or a Supplemental Schedule of Unit Prices) the Owner may order the Contractor to proceed with desired changes in the work, the value of such changes to be determined by the measured quantities involved and the applicable unit and lump sum prices specified in the Contract; provided that in case of a unit price Contract the net value of all changes does not increase or decrease the original total amount shown in the Agreement by more than twenty-five (25) percent .

If applicable unit prices are not contained in the Unit Price Schedule as described above or if the total net change increases or decreases the total Contract price more than twenty-five (25) percent, the Owner shall, before ordering the Contractor to proceed with a desired change, request an itemized Proposal from him covering the work involved in the change after which the procedure shall be as follows:

(1) If the Proposal is acceptable the Owner will prepare the Change Order in accordance therewith for acceptance by the Contractor and

(2) If the Proposal is not acceptable and prompt agreement between the two (2) parties cannot be reached, the Owner may order the Contractor to proceed with the work on a Force Account basis, under which the net cost shall be the sum of the actual costs that follow:

(A) Labor, including foremen;

(B) Materials entering permanently into the work;

(C) The ownership or rental cost of construction plant and equipment during the time of use on the extra work;

(D) Power and consumable supplies for the operation of power equipment;

(E) Insurance;

(F) Social Security and old age and unemployment contributions.

To the net cost shall be added a fixed fee agreed upon, but not to exceed fifteen (15) percent of the net cost, to cover supervision, overhead, bond, and any other general expense, and profit.

Each Change Order shall include in its final form:

(1) A detailed description of the change in the work.

(2) The Contractor's Proposal (if any) or a conformed copy thereof.

(3) A definite statement as to the resulting change in the Contract price and/or time.

(4) The statement that all work involved in the change shall be performed in accordance with Contract requirements except as modified by the Change Order.

GC.17 CLAIMS FOR EXTRA COST

If the Contractor claims that any work encountered related to the project involves additional cost or extension of time beyond what has been required in the contract documents, he shall immediately notify the Owner and within ten (10) days after encountering such additional work or delays, and in any event before proceeding to execute the work, submit his claim for additional project time or additional compensation thereto in letter format to the Owner, with a copy to the Engineer. No such claim will be considered unless so made and within the 10 day timeframe.

At a minimum, the following information shall be numbered as follows and must be provided with the submitted claim:

(1) Project name
(2) Claim number
(3) Date encountered
(4) Nature of the event
(5) Location of the event
(6) Cause of the event
(7) Impact of the event
(8) Items of work affected by the event
(9) The name, title, and activity of each of the Owner’s representative knowledgeable about facts that gave rise to such claim
(10) The name, title, and activity of each Contractor or employee knowledgeable about facts that gave rise to such claim
(11) The cost or extension of time associated with the event
(12) Any additional supporting information

Claims for additional compensation for extra work, due to alleged errors in ground elevations, contour lines, or bench marks, will not be recognized unless accompanied by certified survey data made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted or would result in handling more material, or performing more work, than would be reasonably estimated from the Drawings and maps issued.

Any discrepancies which may be discovered between actual conditions and those represented by the Drawings and maps shall at once be reported to the Owner, and work shall not proceed except at the Contractor's risk, until written instructions have been received by him from the Owner.

The Owner will provide documentation of the decision in writing to the Contractor whether the decision be approval of the claim, denial of the claim or a request for additional information. The Owner's decision on any claim will be the final resolution to the claim.

If, on the basis of the available evidence, the Owner determines that an adjustment of the Contract Price and/or Time is justifiable, the procedure shall then be as provided in the Section entitled CHANGES IN THE WORK under GENERAL CONDITIONS.

GC.18 OWNER'S RIGHT TO TERMINATE CONTRACT

If the Contractor shall be adjudged as bankrupt or shall file a petition for an arrangement or reorganization under the Bankruptcy Act, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except under conditions where extension of time is approved, to supply adequate workmen, equipment and material, or disregard laws, ordinances, or the instructions of the Engineer, or otherwise be guilty of a violation of any provisions of the Contract; provided further that if the Contractor at any time fails to comply with any applicable Federal or State regulation which prevents either the Owner or the Contractor from fulfilling its obligations under these Contract Documents, then the Owner upon certification of the Engineer that sufficient cause exists to justify such action may, without prejudice to any other right or remedy, and after giving the Contractor ten (10) days' written notice, terminate the employment of the Contractor. At the expiration of the said ten (10) days, the Owner may immediately serve notice upon the Surety to complete the work.

In the case the Surety fails to comply with the notice within thirty (30) days after service of such notice, the Owner may complete the work and charge the expense of the completion. Contractor shall not be entitled to receive any further payment until the work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the work performed.

Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

Owner may not proceed with termination of the Contract if Contractor within ten days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

Upon ten days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract for convenience. In such case, Contractor shall be paid for completed and acceptable work executed in accordance with the Contract Documents prior to the effective date of termination. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

GC.19 SUSPENSION OF WORK

Should contingencies arise to make such action necessary, the Owner shall have the right to suspend the whole or any part of the work for a period not to exceed ninety (90) days by giving the Contractor notice in writing three (3) days prior to the suspension.

The Contractor, after written notice to resume work, shall begin within ten (10) days from the date of such notice.

If the work or any part thereof shall be stopped by the Owner's notice and the Owner fails to notify the Contractor to resume work within ninety (90) days, the Contractor may abandon that portion of the work so suspended. The Contractor shall be paid for all acceptable work not deemed as defective that has been performed on the portion so suspended at unit prices quoted in the Unit Price Schedule for completed work involved, at agreed prices on any extra work involved, and at a fair and equitable price for partially completed work involved.

The Owners representative may suspend work pending the settlement of any controversy. The Contractor shall not be entitled to any claim for loss or damage by reason of such delay, nor shall he be entitled to any extension of time; but an extension may be granted by the Owner at his discretion.

GC.20 CONTRACT TIME – DELAYS – EXTENSION OF TIME

GC.20.1 Contract Time

The time allowed for the completion of the work will be as specified in the contract as Fixed Completion Date or Working Days. It is understood and agreed by and between the Owner and the Contractor that the time of completion herein set out is a reasonable time. The Contractor shall perform fully, entirely, and in an acceptable manner, the work contracted for within the contract time stated in the Contract. The contract time shall be counted from ten days after the effective date of the “Notice to Proceed”, or the date work commences, whichever occurs first.

(1) FIXED COMPLETION DATE: When the contract time is specified as a fixed date, it will be the date on which all work on the project shall be substantially complete without exception.

(2) CONTRACT TIME: based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his or her weekly statements of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved CHANGE ORDERS or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his or her weekly statement of contract time charged on the following considerations:

a. No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least six (6) hours with the normal work force employed on such principal item. Should the normal work force be on a double-shift, 12 hours shall be used. Should the normal work force be on a triple-shift, 18 hours shall apply. Conditions beyond the Contractor’s control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Owner for reasons not the fault of the Contractor, shall not be charged against the contract time.

b. The Engineer will not make charges against the contract time prior to the effective date of the notice to proceed.

c. The Engineer will begin charges against the contract time on the first working day after the effective date of the notice to proceed.

d. The Engineer will not make charges against the contract time after the date of final acceptance as defined in the subsection 50-15 titled FINAL ACCEPTANCE of Section 50.

e. The Contractor will be allowed one (1) week in which to file a written protest setting forth his or her objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

(3) HOLIDAYS: Holidays that shall be observed are the following: New Year's Day (January 1); Dr. Martin Luther King Jr.'s Birthday (3rd Monday in January); President's Day (3rd Monday in February); Memorial Day (last Monday in May); Independence Day (July 4); Labor Day (1st Monday in September); Columbus Day (2nd Monday in October); Thanksgiving Day (4th Thursday in November); Day after Thanksgiving (Friday following Thanksgiving); Christmas Eve (December 24); and Christmas Day (December 25). If a holiday falls on a Saturday or Sunday, the observed day shall be the Friday preceding the Saturday or the Monday following the Sunday.

GC.20.2 Excusable Delays

The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged for any contract time due:

(a) To any acts of the Government, including controls or restrictions upon requisitioning of materials, equipment, tools, or labor by reason of war, National Defense, or any other national emergency;

(b) To any acts or neglect of the Owner or employees that can be proven to have delayed the project;

(c) To causes not reasonably foreseeable by the parties of this Contract which are beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, acts of another Contractor in the performance of some other Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, cyclones, and other extreme weather conditions resulting in weather delays in excess of the normal weather-related events.

(d) To inaccessibility to a necessary portion of the work due to utility conflict or utility work, either of which prevents utilization of 60% normal forces and equipment to prosecute the work required for at least 60% of the normal working hours.

(e) To any delay of any subcontractor occasioned by any of the causes specified in subparagraphs (a), (b), (c), and (d) of this paragraph.

No compensation will be made for monetary damages due to excusable delays.

GC.20.3 Extension of Time

Extensions of time for construction contract completion may be granted for such reasonable time as determined by the Owner for the circumstances stated below:

(a) Excusable delays as previously specified;

(b) If the satisfactory execution and completion of the Contract shall require work or material in greater amounts or quantities than those set forth in the Contract, then the Contract time may be increased in the same proportion as the additional work bears to the original contracted work;

(c) The Owner shall have the authority to grant additional extensions of time as the Owner

may deem justifiable.

For clarification purposes, the below items are ineligible for time extensions:

(a) Workload of the Contractor;

(b) Normal precipitation amounts and soil conditions;

(c) Contractor's plea that insufficient contract time to perform construction scope of work was specified;

(d) The ability of vendors, suppliers, and subcontractors to provide materials and/or services within the Contractor's control;

(e) All Working Days elapsing between the effective dates of any orders of the Owner or Engineer for suspension of the prosecution of the work due to the fault of the Contractor.

Extensions of contract time will not be granted automatically. The Contractor shall be required to follow the below procedure to be granted a time extension and no other:

(a) For all other instances, the Contractor shall submit a time extension request in writing to the Owner with dates and supporting documentation as proof of extraordinary delays beyond the Contractor's control that meet the required criteria. The request shall be made within ten (10) Working Days of the occurrence of the delay.

(b) In event of a continuing cause of delay, only one claim is necessary.

(c) If the Contractor does not provide written notice within the allotted time, no subsequent requests for review will be considered.

(d) In case of disagreement between the representative of the Owner and the Contractor, as to the classification of any day, the matter shall be referred to the Owner whose decision shall be final.

It is, therefore, agreed that if there is a delay in the completion of the work beyond the period elsewhere herein specified which has not been authorized by the Owner as set forth above, then the Owner may deduct from the Contract price the amount stated in the section entitled LIQUIDATED DAMAGES FOR DELAY under the GENERAL CONDITIONS, bound herewith, as liquidated damages.

GC.21 PROGRESS SCHEDULE

The Contractor shall submit a construction contract schedule of the bar graph (or other approved) format seven (7) Working Days prior to the preconstruction conference showing the following information as a minimum:

(1) Actual date construction is scheduled to start.

(2) Planned contract completion date.

(3) Beginning and completion dates for each phase of work.

(4) Respective dates for submission of shop drawings/material submittals and the beginning of manufacture, the testing of, and the installation of materials, supplies, and equipment.

(5) All construction milestone dates.

(6) A separate graph showing work placement in dollars versus contract time. The schedule shall incorporate contract changes as they occur. The schedule shall be maintained in an up-to-date condition and shall be available for inspection at the construction site at all times.

The construction contract schedule shall be submitted in conjunction with and/or in addition to any other specification requirements concerning schedules

GC.22 LIQUIDATED DAMAGES FOR DELAY

The number of Working Days allowed for completion of the project is stipulated in the Proposal and in the Contract and shall be known as the Contract Time. The Contractor agrees that time is a critical element for this Contract. Loss will accrue to the Owner due to delayed completion of the work; and the cost to the Owner of the administration of the Contract, including engineering, inspection, and supervision, will be increased as the time occupied in the work is lengthened. The Contractor agrees that for each day of delay beyond the number of Working Days herein agreed upon for the completion of the work herein specified and contracted for (after due allowance for such extension of time as is provided for in General Conditions), the Owner may withhold, permanently, from the Contractor's total compensation, the sum of One Thousand Dollars ($1,000.00) as stipulated damages for each day of such delay. Should the amount otherwise due the Contractor be less than the amount of such ascertained and liquidated damages, the Contractor and his Surety shall be liable to the Owner for such deficiency.

GC.23 DISPUTES

All disputes arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of Contract shall within thirty (30) days of commencement of the dispute be presented by the Contractor to the Owner for decision. In the meantime, the Contractor shall proceed with the work as directed. Any dispute not presented within the time limit specified within this paragraph shall be deemed to have been waived.

The Contractor shall submit in letter format the details of the dispute and proof thereof. Each decision by the governing body of the Owner will be in writing.

If the Contractor does not agree with any decision of the Owner, he shall in no case allow the dispute to delay the work, but shall notify the Owner promptly that he is proceeding with the work under protest, and he may then except the matter in question from the final release. Substantial completion of the project will not be granted until pending disputes are resolved. As such, the Owner shall withhold final payment and retainage release until all pending disputes are resolved.

At any time after initiation of a dispute, Owner and Contractor may mutually agree to mediation of the dispute. Owner and Contractor shall each pay one-half of the mediator’s fees and costs. If mediation is unsuccessful, the Owner or Contractor shall give written notice to the other party of the intent (if they so intend) to submit the dispute to a court of competent jurisdiction.

GC.24 ASSIGNMENT OR NOVATION

The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the Owner; provided, however, that assignments to banks, trust companies, or other financial institutions may be made without the consent of the Owner. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment, supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, or equipment.

GC.25 TECHNICAL SPECIFICATIONS AND DRAWINGS

Three (3) sets of Plans and Specifications shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at the approximate cost of reproduction upon request.

The Contractor shall keep one (1) copy of all Drawings and Contract Documents in good condition readily accessible at the site of the work available to the Engineer and his authorized representatives.

The Drawings and this Specification are to be considered cooperative. All work necessary for the completion of the facility shown on the Drawings, but not described in this Specification, or described in this Specification but not shown on the Drawings, OR REASONABLY IMPLIED BY EITHER OR BOTH, shall be executed in the best manner, the same as if fully shown and specified. When no figures or memoranda are given, the Drawings shall be accurately followed, but in all cases of discrepancy in figures or details, the decision of the Engineer shall be obtained before proceeding with the Work. If the Contractor adjusts any such discrepancy without first having obtained the approval of the Engineer, it shall be at his own risk, and he shall bear any extra expense resulting therefrom.

GC.26 RECORD DRAWINGS

Before any work is started, the Contractor shall obtain at his own expense one set of Plans to be used for Record Drawings. The Engineer will supply the Plans at printing cost to the Contractor. Record Drawings will be kept on full-size plan sheets; no half-size sheets will be permitted. The Record Drawings shall be stored and maintained in good condition at all times by the Contractor and shall be made available to the Engineer at the work site immediately at the Engineer's request. All writing, notes, comments, dimensions, etc. shall be legible. The Record Drawings shall be stored flat and shall not be rolled. The Record Drawings shall be submitted to the Engineer before the project can be accepted.

The Contractor shall accurately identify and document the locations of all underground and/or concealed work that he has performed and/or has been affected by his work. This shall include all equipment, conduits, pipe lines, valves, fittings and other appurtenances and underground structures that are part of the Contractor's work and their proximity to existing underground structures and utilities to the extent known. The Contractor will certify accuracy of the Record Drawings by endorsement.

The Contractor's work shall be documented on the Record Drawings in an on-going manner. Distances, offsets, depths, etc. shall be accurately measured from permanent fixed objects so that the Owner can expose any item of the work in the future with a minimum of effort. All such measurements shall be made before the items of work are covered or backfilled. The Contractor shall be required to expose and recover/backfill the work at his own expense if, in the Engineer's opinion, the measurements need to be verified.

GC.27 SHOP DRAWINGS

Shop Drawings shall be required for all equipment, materials, and as required by the Engineer. All Shop Drawings, Machinery Details, Layout Drawings, etc., shall be submitted to the Engineer for review (unless otherwise specified) in one of the two following manners: six (6) hardcopies or a single electronic copy in PDF format. This shall be completed sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting, and rechecking if necessary. The Contractor may proceed, only at his own risk, with manufacture or installation of any equipment or work covered by said Shop Drawings, etc. until they are reviewed, and approved; and no claim, by the Contractor, for extension of the Contract time will be granted by reason of his failure in this respect.

Any Drawings submitted without the Contractor's stamp of approval will not be considered and will be returned to him for proper resubmission. If any Drawings show variations from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of Contract price and/or time; otherwise, the Contractor will not be relieved of the responsibility for

executing the work in accordance with the Contract even though the Drawings have been reviewed.

The review of Shop Drawings by the Engineer shall be considered an accommodation to the Contractor to assist him in the execution of the Contract. The Engineer's review of such Drawings shall not relieve the Contractor of his responsibility to perform the work in strict accordance with the Plans and Specifications, and approved changes.

If the Shop Drawing is in accordance with the Contract or involves only a minor adjustment in the interest of the Owner not involving a change in Contract price or time, the Engineer shall so stamp the Drawing and shall contain in substance the following:

> "Corrections or comments made on the shop drawings during this review do not relieve Contractor from compliance with requirements of the contract documents. This check is only for review of general conformance with the design concept of the project and general compliance with the requirements of the contract documents. The Contractor is responsible for the quality of work, confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating the work of all trades and subcontractors; and performing the work in a safe and satisfactory manner".

GC.28 SUBMITTALS

The Contractor shall prepare and submit information required by the individual Specification sections sufficiently in advance of the related work to allow an appropriate review time by the Engineer. The types of submittals are indicated in the individual Specification sections.

During the preconstruction conference, the Engineer and the Contractor shall review the submittal schedule and procedures. Submittals will be transmitted via email as PDF electronic files directly to the Engineer's designated representative, through the project management software as instructed by the Engineer. Unless otherwise directed by the Engineer, electronic submittals shall be compatible with Adobe Acrobat (*.PDF) format and shall be legible when printed.

Submittals shall be neat, organized, and easy to interpret. Assemble complete submittal package into a single indexed electronic file or hard cover bound book, incorporating submittal requirements of an individual Specification section, the transmittal form with unique submittal numbering system, and electronic links or tabs enabling navigation to each item. Unless approved otherwise by the Engineer, all submittals for the individual Specification section shall be submitted at one time.

Submittals must come directly from the Prime Contractor; submittals from subcontractors or suppliers will not be reviewed.

Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review. Faxed submittals or submittals with extremely small or otherwise unreadable print will not be accepted. Submittals not required by the Contract Documents will be returned by the Engineer without action.

The Contractor shall retain complete copies of submittals on project site. Use only final submittals that are marked with approval notation from Engineer's submittal review stamp with comments form.

The Contractor will implement, in conjunction with the Engineer and Owner, project-specific procedures/policies for construction management services during construction to assist in obtaining completed Projects in accordance with the purpose and intent of the construction documents including, but not limited to the following:

1. Use required web based construction management software such as Newforma Info Exchange, and require all Subcontractors and any other project participants to use this software as well. Access to this system will be provided at no cost to the Contractor.

Resubmittals shall continue the unique, sequential, submittal numbering system. Resubmittals without unique numbering, example resubmittals transmitted as 005A or 005REV, are unacceptable and will be returned un-reviewed.

The Engineer's costs related to the third and subsequent reviews of complete or partial submittals/shop drawings, required due to previously incomplete or unacceptable submittals/shop drawings, may be withheld by the Owner from payments due the Contractor.

GC.29 REQUESTS FOR SUPPLEMENTARY INFORMATION

It shall be the responsibility of the Contractor to make timely requests of the Owner for any additional information not already in his possession which should be furnished by the Owner under the terms of this Contract, and which he will require in the planning and execution of the work. Such requests may be submitted from time to time as the need is approached, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and shall list the various items and the latest date by which each will be required by the Contractor. The first list shall be submitted within two (2) weeks after the Contract award and shall be as complete as possible at that time. The Contractor shall, if requested, furnish promptly any assistance and information the Engineer may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for any delay in his work or to others arising from his failure to comply fully with the provisions of this Section. Failure of the Owner to provide any additional information shall not be considered ground for increase in charges above those contained in the Proposal.

GC.30 REFERENCE TO MANUFACTURER OR TRADE NAME - "OR EQUAL CLAUSE"

If the Plans, Specifications, or Contract Documents, laws, ordinances or applicable rules and regulations permit the Contractor to furnish or use a substitute that is equal to any material or equipment specified, and if the Contractor wishes to furnish or use a proposed substitute, he shall make written application to the Engineer for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the functions called for in the general design, be similar and of equal substance to that specified, be suited to the same use and capable of performing the same functions as that specified, and identifying all variations of the proposed substitute from specified and indicating available maintenance service; the use of such substitute will not require revisions of related work. No substitute shall be ordered or installed without the written approval of the Engineer who will be the judge of equality and may require the Contractor to furnish such other data regarding the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as the Owner may require which shall be furnished at Contractor's expense.

Where such substitutions alter the design or space requirements indicated on the Contract Drawings, detailed drawings shall be prepared and submitted by the Contractor delineating any changes in, or additions to, the work shown on the Contract Drawings, and such drawings and changes or additions to the work shall be made by the Contractor at no additional expense to the Owner. In all cases, the burden of proof that the material or equipment offered for substitution is equal in construction, efficiency, and service to that named on the Contract Drawings and in these Contract Documents shall rest on the Contractor, and unless the proof is satisfactory to the Engineer, the substitution will not be approved.

GC.31 SAMPLES, CERTIFICATES, AND TESTING

The Contractor shall submit all material, product, or equipment samples, descriptions, certificates, affidavits, etc., as called for in the Contract Documents or required by the Engineer, promptly after award of the Contract and acceptance of the Contractor's bond. No such material or equipment shall be manufactured or delivered to the site, except at the Contractor's own risk, until the required samples or certificates have been approved in writing by the Engineer. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the Contract time. Submit four (4) copies of data for Engineer's review.

Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the project for which it is intended, and the name of the producer. The accompanying certificate or letter from the Contractor shall state that the sample complies with Contract requirements, shall give the name and brand of the product, its place of origin, the name and address of the producer, and all specifications or other detailed information which will assist the Engineer in passing upon the acceptability of the sample promptly. It shall also include the statement that all materials or equipment furnished for use in the project will comply with the samples and/or certified statements.

Approval of any materials shall be general only and shall not constitute a waiver of the Owner's right to demand full compliance with Contract requirements. After actual deliveries, the Engineer will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Engineer will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable, at the Contractor's expense.

Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:

(1) The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes, except those samples taken on the project by the Engineer;

(2) The Contractor shall assume all costs of re-testing materials which fail to meet Contract requirements;

(3) The Contractor shall assume all costs of testing materials offered in substitution for those found deficient; and

(4) The Owner will pay all other expenses.

Quality assurance testing and inspection of materials used in the work shall be done by an approved commercial laboratory employed and paid for directly by the Owner, unless otherwise specified in the Contract Documents. Contractor shall give timely notice for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

Inspections and tests required to be arranged and paid for by the Contractor include those by manufacturers of equipment furnished under the Contract Documents, testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the work, and for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor’s purchase thereof for incorporation in the work.

If any work (or the work of others) that is to be inspected, tested, or approved is made un-accessible by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such work for observation. Such uncovering shall be at Contractor’s expense unless Contractor had given Engineer timely notice of Contractor’s intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

GC.32 TEST BORINGS/SUBSURFACE INFORMATION

Soil characteristics provided in any geotechnical reports, or as shown or referenced in the construction contract documents are not a warranty of subsurface conditions. Subsurface conditions may vary significantly from the data available. Any errors or omissions that may be contained in the available geotechnical data, or variations found at other locations, are not the responsibility of the Owner, Engineer, or Engineer’s consultants, and no claim may be made against them for such. Any reliance on the data is at Contractor’s sole risk.

The Contractor may not rely upon or make any claim against Owner, Engineer, or Engineer's Consultants with respect to (1) the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor and safety precautions and programs incident thereto, (2) other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings, (3) any Contractor interpretation or other conclusion drawn from any data, interpretations, opinions, or information.

Any subsurface information, whether referenced in the plans, specifications, or otherwise made available to Contractor, was obtained and intended for the Owner's design and estimating purposes only and is **not** part of the Construction Contract Documents. The Contractor may perform his own geotechnical investigation, as approved by the Owner.

GC.33 PERMITS AND CODES

The Contractor shall give all notices required by and comply with all applicable laws, ordinances, and codes of the local governments. All construction work and/or utility installations shall comply with all applicable ordinances, and codes including all written waivers.

Should the Contractor fail to observe the foregoing provisions and proceed with the construction and/or install any utility at variance with any applicable ordinance or code, including any written waivers, the Contractor shall remove such work without cost to the Owner.

The Contractor shall at his own expense, secure and pay to the appropriate department of the local government the fees or charges for all permits for street pavements, sidewalks, sheds, removal of abandoned water taps, sealing of house connection drains, pavement cuts, building, electrical, plumbing, water, gas, and sewer permits required by the local regulatory body or any of its agencies.

The Contractor shall comply with applicable local laws and ordinances governing the disposal of surplus excavation, materials, debris, and rubbish on or off the site of the work, and commit no trespass on any public or private property in any operation due to or connected with the Improvements embraced in this Contract.

GC.34 RIGHTS-OF-WAY

The Owner will secure easements across public or private property permanently required for the work at no cost to the Contractor. The Contractor shall lease, buy, or otherwise make satisfactory provision, without obligating the Owner in any manner, for any land required outside the land provided by the Owner. The Owner will secure State Highway and Railroad Crossing Permits. All other permits and licenses necessary for the prosecution of the work shall be secured and paid for by the Contractor.

GC.35 CARE OF WORK

The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any injury, including death, to any person, and for any damage to property which may result from their failure, or from their improper construction, maintenance, or operation. He shall indemnify and save harmless the Owner and the Engineer and their employees and agents, against any judgment with costs, which may be obtained as a result of such injury or property damage, because of the alleged liability of the Owner or of the Engineer.

The Contractor shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the Owner.

The Contractor shall provide sufficient competent watchmen, as required to protect the work both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final

completion and acceptance.

In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorization from the Owner, is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. He shall likewise act if instructed to do so by the Owner. Any compensation claimed by the Contractor on account of such emergency work will be determined by the Owner as provided in the Section entitled CHANGES IN THE WORK under GENERAL CONDITIONS.

The Contractor shall avoid damage, as a result of his operations, to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations, to the satisfaction of the Owner.

The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or other operations connected with the construction of the Improvements embraced in this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Owner, and the Engineer, from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which it may be claimed that the Owner, or the Engineer, is liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

GC.36 QUALITY OF WORK AND PROPERTY

All property, materials, and equipment shall be new and free of defects upon completion of the Contractor's performance and, unless different standards are specified elsewhere in the Contract Documents, shall be of the best type and quality available for the purpose. All of the Contractor's work shall be performed with the highest degree of skill and completed free of defects and in accordance with the Contract Documents. Any work, property, materials, or equipment not in conformance with these standards shall be considered defective. If any work, property, materials or equipment is discovered to have been defective or not in conformance with the Contract Documents, whether said discovery is made before or after completion of performance, the Contractor, at his expense, after written notice from the Owner or Engineer, shall promptly replace or correct the deficiency and pay any engineering costs and consequential expense or damage incurred by the Owner in connection therewith. If the Contractor fails to promptly correct all deficiencies, the Owner shall have the option of remedying the defects at the Contractor's cost. If the Contractor is required to furnish shop drawings or designs, the above provisions shall apply to such drawings or designs.

Neither the Owner's payment, acceptance, inspection or use of the work, property, materials, or equipment, nor any other provision of the Contract Documents shall constitute acceptance of work, property, materials, or equipment which are defective or not in accordance with the Contract Documents. If the Contractor breaches any provision of the Contract Documents with respect to the quality of the work, property, materials, equipment or performance, whether initial or corrective, his liability to the Owner shall continue until the statute of limitations with respect to such breach of contract has expired following discovery of the defect. All parts of this section are cumulative to any other provisions of the Contract Documents and not in derogation thereof. If it is customary for a warranty to be issued for any of the property to be furnished hereunder, such warranty shall be furnished, but no limitations in any such warranty shall reduce the obligations imposed under the Contractor in the Contract Documents or by applicable State Law; but if any greater obligations than imposed in this Contract are specified in any such warranty or by applicable State Law, those greater obligations shall be deemed a part of this Contract and enforceable by the Owner.

GC.37 BARRICADES, LIGHTS, AND WATCHMEN

The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated. Unless otherwise specified, barricades,

warning signs, and markings for hazards that are in the air operations area (AOAs) shall be a maximum of 18 inches (0.5 m) high. Unless otherwise specified, barricades shall be spaced not more than 8 feet (1.2 m) apart. Barricades, warning signs, and markings shall be paid for under ~~subsection 40-05~~ *Section 1000 – Supplemental Specifications, Item SS-120 Site Preparation.*

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices.

When the work requires closing an air operations area of the airport or portion of such area, the Contractor shall furnish, erect, and maintain temporary markings and associated lighting conforming to the requirements of advisory circular (AC) 150/5340-1, Standards for Airport Markings.

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stock piles, and the Contractor's parked construction equipment that may be hazardous to the operation of emergency fire-rescue or maintenance vehicles on the airport in reasonable conformance to AC 150/5370-2, Operational Safety on Airports During Construction.

The Contractor shall identify each motorized vehicle or piece of construction equipment in reasonable conformance to AC 150/5370-2.

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work that requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their removal is directed by the Engineer.

Open-flame type lights shall not be permitted.

The Contractor will be held responsible for all damage to the work due to failure to barricades, signs, lights, and watchmen to protect it, and whenever evidence is found of such damage the Engineer may order the damaged portion immediately removed and replaced by the Contractor at his cost and expense. The Contractor's responsibility for the maintenance of barricades, signs and lights, and for providing watchmen, shall not cease until the project shall have been accepted by the Owner.

GC.38 FENCES AND DRAINAGE CHANNELS

Boundary fences or other improvements removed to permit the installation of the work shall be replaced in the same location and left in a condition as good as or better than that in which they were found except as indicated on the Drawings.

Where surface drainage channels are disturbed or blocked during construction, they shall be restored to their original condition of grade and cross section after the work of construction is completed.

GC.39 WATER FOR CONSTRUCTION

Water used for the mixing of concrete, testing, or any other purpose incidental to this project, shall be furnished by the Contractor. The Contractor shall make the necessary arrangements for securing and transporting such water and shall take such water in a manner and at such times that will not produce a harmful drain or decrease of pressure in the Owners' water system. No separate payment will be made for water used but the cost thereof shall be included in the work items represented in the Unit Price Schedule.

GC.40 MATERIAL STORAGE

Materials delivered to the site of the work in advance of their use shall be stored so as to cause the least inconvenience and in a manner satisfactory to the Engineer.

GC.41 EXISTING UTILITIES AND SERVICE LINES

The Contractor shall be responsible for the protection of all existing utilities or improvements crossed by or adjacent to his construction operations. Where existing utilities or service lines are cut, broken, or damaged, the Contractor shall replace or repair immediately the utilities or service lines with the same type of original material and construction or better, at his own expense.

GC.42 DEFECTIVE WORK

It is the Contractor's obligation to assure that the work is not defective. The Engineer has the authority to determine whether work is defective, and to reject defective work. Contractor shall correct all such defective work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective work, remove it from the project and replace it with work that is not defective. Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective work, fines levied against Owner by governmental authorities because the work is defective, and the costs of repair or replacement of work of others resulting from defective work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective work, then Owner may impose a reasonable set-off against payments due.

If Contractor fails within a reasonable time after written notice from Engineer to correct defective work, or to remove and replace rejected work as required by Engineer, or if Contractor fails to perform the work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after ten days written notice to Contractor, correct or remedy any such deficiency. Owner may exclude Contractor from all or part of the Site, take possession of all or part of the work and suspend Contractor's services related thereto, and incorporate in the work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

All claims, costs, losses, and damages incurred or sustained by Owner will be charged against Contractor as set-offs against payments. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective work.

If the Owner prefers to accept defective work, Owner may do so explicitly in writing (subject to Engineer's confirmation, if such acceptance occurs prior to final payment). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the work to the extent not otherwise paid by Contractor.

If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of work so accepted, then Owner may impose a reasonable set-off against payments due. If the acceptance of defective work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the work attributable to the exercise by Owner of Owner's rights and remedies under this General Condition.

GC.43 ACCIDENT PREVENTION

The Contractor shall exercise proper precaution at all times for the protection of persons and property and

shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes, including applicable parts of the State's labor safety code, shall be observed. The Contractor shall take or cause to be taken such safety and health measures, additional to those herein required, as he may deem necessary or desirable. Machinery, equipment, and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws.

The Contractor shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the Owner with reports concerning these matters.

The Contractor shall indemnify and save harmless the Owner, and the Engineer, from any claims for damages resulting from personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this Contract.

GC.44 TRENCH AND EXCAVATION SAFETY SYSTEMS

This section covers trench and excavation safety system required for constructing improvements that necessitate open excavations on the project. All work under this item shall be in accordance with the current edition of the "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P.

The Contractor, prior to beginning any excavation, shall notify the State Department of Labor (Safety Division) that work is commencing on a project with excavations greater than five feet.

The Contractor shall notify all Utility Companies and Owners in accordance with OSHA Administration 29 CFR 1926.651(b) (2) for the purpose of locating utilities and underground installations.

Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other installation, the Contractor shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such structure or utility.

The Contractor may elect to remove and replace or relocate such structures or utilities with the written approval of the Owner of the structure or utility and the Project Owner.

After award of the contract, the Contractor shall submit to the Engineer a breakdown of cost for work involved in the "Trench and Excavation Safety Systems" and shall, with each periodic payment request, submit a certification by the Contractor's "competent person" as defined in Subpart "P" 1926.650(b) that the Contractor has complied with the provisions of "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System", 29 CFR 1926 Subpart P for work for which payment is requested.

GC.45 UNDERGROUND FACILITIES

All work in this contract shall be in accordance with applicable state Underground Facilities Damage Prevention Acts, or similar state requirements which protect underground facilities. The Contractor shall abide by the most current edition of these requirements.

Underground utilities may exist within and adjacent to the limits of construction. An attempt has been made to locate these utilities on the plans. However, all existing utilities may not be shown, and the actual locations of the utilities may vary from the locations shown. Prior to beginning any type of excavation, the Contractor shall contact the utilities involved and make arrangements for the location of the utilities on the ground. The Contractor shall maintain the utility location markings until they are no longer necessary.

GC.46 SANITARY FACILITIES

The Contractor shall furnish, install, and maintain ample sanitary facilities for the workers. As the needs arise, a sufficient number of enclosed temporary toilets shall be conveniently placed as required by the sanitary codes of the State and County. Drinking water shall be provided from an approved source, so piped or transported as to keep it safe and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing and governing health regulations.

GC.47 USE OF PREMISES

The Contractor shall confine his equipment, storage of materials, and construction operations to the Rights-of-Way to accommodate the permanent construction furnished by the Owner, or as may be directed otherwise by the Owner, and shall not unreasonably encumber the site of other public Rights-of-Way with his materials and construction equipment. In case such Rights-of-Way furnished by the Owner are not sufficient to accommodate the Contractor's operations, he shall arrange with the County, or with the owner or owners of private property for additional area or areas, and without involving the Owner in any manner whatsoever.

The Contractor shall comply with all reasonable instructions of the Owner and the ordinances and codes of the State and County (including but not limited to those) regarding signs, advertising, traffic, fires, explosives, danger signals, and barricades.

GC.48 PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED

In case it is necessary to change or move the property of any owner or of a public utility, such property shall not be moved or interfered with until ordered to do so by the Engineer. The right is reserved to the owner of public utilities to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by performance of this Contract.

GC.49 LIGHT AND POWER

The Contractor shall provide, at his own expense, temporary lighting and facilities required for the proper prosecution and inspection of the work. At the time the Owner obtains beneficial occupancy of any of the facilities placed in satisfactory service, charges for power and light for regular operation of those involved facilities will become the responsibility of the Owner.

GC.50 USED MATERIALS

No material which has been used by the Contractor for any temporary purpose may be incorporated in the permanent work without written consent of the Engineer.

GC.51 REMOVAL OF DEBRIS, CLEANING, ETC.

The Contractor shall periodically or as directed during the progress of the work, remove and legally dispose of all surplus excavated material and debris, and keep the project site and public Rights-of-Way reasonably clear. Upon completion of the work, he shall remove all temporary construction facilities, debris, and unused materials provided for the work, thoroughly clean all drainage pipes, structures, ditches, and other features, and put the whole site of the work and public Rights-of-Way in a neat and "broom" clean condition. Trash burning on the site of the work will be subject to prior approval of the Owner and existing State and local regulations.

GC.52 EXISTING STRUCTURES

The Plans show the locations of all known surface and subsurface structures. However, the Owner assumes no responsibility for failure to show any or all of these structures on the Plans, or to show them in their exact location. It is mutually agreed that such failure shall not be considered sufficient basis for claims

for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or requires the building of special work, provisions for which are not made in the Plans and Proposal, in which case the provisions in these Specifications for extra work shall apply.

The Contractor shall be responsible for protection of all existing structures and any damage caused by his operations shall be repaired immediately without cost to the Owner. It shall be the responsibility of the prospective Contractor to examine the site completely before submitting his bid.

GC.53 EMERGENCIES

In emergencies affecting the safety or protection of personnel, the general public, the work, and property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order may be issued.

GC.54 HAZARDOUS MATERIALS

If Contractor encounters, uncovers, or reveals a hazardous material or environmental condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the work, or if Contractor or anyone for whom Contractor is responsible creates a hazardous material or condition, then Contractor shall immediately secure or otherwise isolate such condition, stop all work in connection with such condition and in any area affected thereby (except in an emergency), and notify Owner and Engineer (and promptly thereafter confirm such notice in writing). If Contractor or anyone for whom Contractor is responsible created the hazardous material or condition in question and is unable or refuses to satisfactorily address the issue, then Owner may remove and remediate the hazardous material or condition, and impose a set-off against payments to account for the associated costs.

GC.55 RETURN OF OWNER'S MATERIALS, EQUIPMENT, OR PROPERTY

Any materials, equipment or other property which belongs to the Owner, removed by the Contractor, shall be delivered to the Owner's designated warehouse unless its re-use or disposal is specified in the Plans and Specifications. If the Contractor fails to deliver the materials, equipment, or other property, the value, as determined by the Engineer, shall be deducted from amounts due the Contractor.

GC.56 PAY ITEM DESCRIPTION

Of necessity the items described and shown as components are discussed in a general manner only, describing the major pieces of equipment and/or materials. Any item and/or appurtenance not specifically mentioned shall be considered a portion of the bid item to which, in the opinion of the Engineer, its function is most directly related. Failure to list all items and/or appurtenances does not relieve the Contractor from furnishing all apparatus, devices, labor or materials of whatever nature required for a complete installation in accordance with the intent of the Drawings, approved Shop Drawings and these Specifications.

GC.57 SPARE PARTS

After approval of the Shop Drawings, the Contractor shall furnish spare parts data for each different item of equipment, valves, instrumentation, etc., for which normal operation requires replacement parts for dependable service. The data shall include a complete list of parts and supplies, with source of supply; list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment or specified hereinafter to be furnished as part of the contract and a list of additional items recommended by the manufacturer to assure efficient operation. The foregoing shall not relieve the Contractor of any responsibilities under the guaranty specified.

GC.58 OBSERVATION OF WORK

The Owner, his authorized representative, and any Federal, State, County, or local authority representative having jurisdiction over any part of the work, or area through which the work is located, shall at all times have access to the work in progress.

The detailed manner and method of performing the work shall be under the direction and control of the Contractor, but all work performed shall at all times be subject to the observation of the Engineer or his authorized representative to ascertain its conformance with the Contract Documents. The Contractor shall furnish all reasonable aid and assistance required by the Engineer for the proper observation and examination of the work and all parts thereof.

The Engineer is not responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or safety precautions and programs incident thereto.

Observers may be appointed by the Engineer or Owner. Observers shall have no authority to permit any deviation from the Plans and Specifications except on written order from the Engineer and the Contractor will be liable for any deviation except on such written order. Observers shall have authority, subject to the final decision of the Engineer, to condemn and reject any defective work and to suspend the work when it is not being performed properly.

The observer shall in no case act as superintendent or foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any advice which the observer may give the Contractor shall in no way be construed as binding to the Engineer in any way or releasing the Contractor from fulfilling all of the terms of the Contract.

Any defective work may be rejected by the Engineer at any time before final acceptance of the work, even though the same may have been previously overlooked and estimated for payment and payment therefore made by the Owner.

The Contractor shall notify the Engineer sufficiently in advance of backfilling or concealing any facilities to permit proper observation. If the facilities are concealed without approval or consent of the Engineer, the Contractor shall uncover for observation and recover such facilities all at his own expense, when so requested by the Engineer.

Should it be considered necessary or advisable by the Engineer at any time before final acceptance of the entire work to make an examination of work already completed, by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any important or essential respect, due to fault of the Contractor or his Subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus fifteen (15) percent of such costs to cover superintendence, general expenses and profit, shall be allowed the Contractor and he shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

Observation of materials and appurtenances to be incorporated in the Improvements embraced in this Contract may be made at the place of production, manufacture or shipment, whenever the quantity justifies it, and such observation and acceptance, unless otherwise stated in the Technical Specifications, shall be final, except as regards (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the observation of materials as a whole or in part will be made at the project site.

All condemned or rejected work shall be promptly taken out and replaced by satisfactory work. Should the Contractor fail or refuse to comply with the instructions in this respect, the Owner may, upon certification by the Engineer, withhold payment, proceed to terminate the Contract, or perform work as provided herein.

GC.59 REVIEW BY OWNER

The Owner, its authorized representatives and agents, shall at all times during work hours have access to and be permitted to observe and review all work, materials, equipment, payrolls, and personnel records pertaining to this Contract, provided, however, that all instructions and approval with respect to the work will be given to the Contractor only by the City through its authorized representatives or agents. Representatives of Federal, State, and City agencies also have the right of physical inspection of the work during work hours.

GC.60 PROHIBITED INTERESTS

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any executive, supervisory, or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof.

GC.61 SUBSTANTIAL COMPLETION

When Contractor considers the entire work ready for its intended use, Contractor shall notify Owner and Engineer in writing that the entire work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the work to determine the status of completion. If Engineer does not consider the work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

If Engineer considers the work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment, along with a timeframe to complete the punch list items. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the work.

Upon Substantial Completion, the project time for completion will stop and the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

If the Contractor does not achieve Final Completion in the specified time noted on the substantial completion punch list, the project time for completion will continue from the specified Final Completion date until all punch list items have been completed.

GC.62 FINAL INSPECTION AND ACCEPTANCE

When the Improvements embraced in this Contract are substantially completed and punch list items have been addressed, the Contractor shall notify the Owner in writing that the work will be ready for final inspection on a definite date which shall be stated in the notice. The notice will be given at least ten (10) days prior to the date stated for final inspection, and bear the signed concurrence of the representative of the Owner having charge of observation. If the Owner determines that the status of the Improvements is as represented, it will make the arrangements necessary to have final inspection commenced on the date stated in the notice, or as soon thereafter as practicable. The inspection party will also include the representatives of Owner and any other involved government agencies when such improvements are later to be accepted by the Owner and/or other government agencies. Upon confirmation that all improvements have been properly constructed, Final Acceptance will be granted and the Contractor's General Guaranty will begin.

GC.63 CONTRACTOR'S OBLIGATION TO COMPLETE THE WORK

Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents: any review and approval of a Shop Drawing or Sample submittal; observations by Engineer or Resident Project Representative; recommendation of or payment of progress or final payment; the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner; use or occupancy of the Work or any part thereof by Owner; any inspection, test, or approval by others; or any correction of defective work by Owner.

GC.64 PATENTS

The Contractor shall hold and save harmless the Owner, its officers, employees, and the Engineer, from liability of any nature or kind, including costs and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Owner, unless otherwise specifically stipulated in the Technical Specifications.

GC.65 WARRANTY OF TITLE

No material, supplies, or equipment for the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Owner free from any claims, liens, or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontracts and material Contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal Contract is entered into for such materials.

GC.66 GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the Improvements embraced in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express

warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the agreed upon day of final acceptance (not substantial completion) of the work. The Owner will give notice of defective materials and work with reasonable promptness.

GC.67 REUSE OF DOCUMENTS

Contractor and its Subcontractors and Suppliers shall not have or acquire any title to or ownership rights in any of the Contract Documents, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, or reuse any such documents or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

GC.68 RELEASE AND CONTRACTOR'S AFFIDAVIT

At the project's completion, the Contractor shall execute the attached Release and Lien Waiver to release all claims against the Owner arising under and by virtue of his Contract. The date of the Release shall be that agreed to for the final acceptance of the project with the Owner.

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RELEASE

FROM: Contractor's Name _____

Address _____

TO: Owner's Name _____

Address _____

DATE OF CONTRACT: _____

Upon receipt of the final payment and in consideration of that amount, the undersigned does hereby release the Owner and its agents from any and all claims arising under or by virtue of this Contract or modification thereof occurring from the undersigned's performance in connection with the

_____

_____

project.

_____
Contractor's Signature

_____
Title

Subscribed and sworn to before me this _____ day of _____, 20___.

_____
Notary Public

My Commission Expires:

_____

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CONTRACTOR'S AFFIDAVIT

FROM: Contractor's Name _____

Address _____

TO: Owner's Name _____

Address _____

_____

DATE OF CONTRACT: _____

I hereby certify that all claims for material, labor, and supplies entered into contingent and incident to the construction or used in the course of the performance of the work on _____

_____

have been fully satisfied.

_____
Contractor's Signature

_____
Title

Subscribed and sworn to before me this _____ day of _____, 20____.

_____
Notary Public

My Commission Expires:

_____

The Surety Company consents to the release of the retained percentage on this project with the understanding that should any unforeseen contingencies arise having a right of action on the bond that the Surety Company will not waive liability through the consent to the release of the retained percentage.

Dated _____
Surety Company

By _____
Resident Agent, State of Project

010900 - SPECIAL CONDITIONS

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SECTION A – SPECIAL CONDITIONS

SC.1 GENERAL

The provisions of this section of the Specifications shall govern in the event of any conflict between them and the "General Conditions".

SC.2 LOCATION OF PROJECT

This project is located at the Alva Regional Airport, 2875 College Boulevard, Alva, Oklahoma 73717. A map showing the general location is included in the Plans.

SC.3 SCOPE OF WORK

The project includes, but is not limited to, the items listed below as shown on the plans and indicated in the specifications:

- Removal of painted numbers and markings for the south for 310 feet on the 36 end.
- Removal of painted numbers and marking for the north for 310 feet on the 18 end.
- Remarking of both 18 and 36 with new threshold markings and designation numbers.
- Removal of all markings, lead-in lines, and hold lines for Runway 17-35.
- Remarking of former Runway 17-35 to Taxiway, including continuous centerline, continuous edge markings, and shoulder markings to delineate a 35' wide taxiway.
- Painting of new taxiway fillets and intersection lines serving the new Taxiway A.
- Runway 18-36 Lighting relocation and rehabilitation.
- Deactivation of portions existing electrical circuits by physically severing the circuit at various locations.
- Removal of all runway lights on former Runway 17-35. Existing wire to be re-spliced and remain in service.
- Installation of new retro reflectors

SC.4 TIME ALLOTTED FOR COMPLETION

The time allotted for completion of the work shall be fifteen (15) working days, which time shall begin within ten (10) days of the work order or notice to proceed, or upon the date the Contractor moves on the site to begin the work, whichever is the earliest date. After award of the Contract is made and the Contract Documents are completed, the Engineer shall issue a Work Order or Notice to Proceed, notifying the Contractor to proceed with the construction of the project, subject to the provisions of this paragraph.

SC.5 REFERENCE SPECIFICATIONS

Where reference is made in these Specifications to specifications compiled by other agencies, organizations or departments, such reference is made for expediency and standardization, and such specifications (latest edition thereof) referred to are hereby made a part of these Specifications.

More specifically, if any items or materials required for completion of the work required for this project are not specified in these Contract Documents, such items or materials and requirements for installation shall conform to the standards or preferences of Federal Aviation Administration.

SC.6 SALES TAX

The project is tax exempt for the purchase of materials permanently incorporated into the project, except for concrete forms or other tools.

SC.7 USE OF EXPLOSIVES

The use of explosives will not be permitted except as specifically described in the Specifications.

SC.8 SEQUENCE OF CONSTRUCTION

Sequence of all phases of work shall be such as to provide for the least possible inconvenience to the Owner. Scheduling of work which would interfere with normal traffic operation shall be coordinated with the Owner. Material and equipment received on the project prior to time of installation shall be stored at such locations designated by the Owner.

More specific instructions which must be accomplished in a certain sequence are included in the plans.

Before any of the facilities are taken out of service to accomplish the various items of work, the Contractor shall demonstrate to the Owner and Engineer's satisfaction that all equipment and materials required to complete that particular item of work are on hand. As much preliminary work as is possible shall be accomplished prior to taking any unit out of service.

SC.9 MAINTENANCE BOND

The Contractor shall execute the attached Maintenance Bond guaranteeing the work included in the Contract against faulty materials and/or poor workmanship for one year after completion of the Contract. The date of the Maintenance Bond shall be that agreed to for the final acceptance of the project with the Owner. The Maintenance Bond shall be for 100% of the final contract amount.

At the end of the applicable maintenance period, the Owner and/or the Engineer, with the Contractor, shall make an inspection of the work. The Contractor immediately shall repair and correct any and all defects which have resulted from faulty workmanship, equipment, or materials, following which repair and correction the Owner will accept full maintenance of the work.

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____,

as Principal, and _____,

as Surety, are held and firmly bound unto _____

_____, as Obligee, in the full and just sum

of _____Dollars ($_____), lawful money of the United States of America, to be paid to the said Obligee, its successors or assigns, for the payment of which, well and truly to be made, we and each of us, bind ourselves, our heirs, executors and assigns, themselves, and their successors and assigns, jointly and severally, firmly by these presents.

Dated this _____ day of _____, 20____.

The conditions of this obligation are such that whereas, said Principal, has by a certain

contract with the _____

_____

dated _____ day of _____, 20____, agreed to construct the _____

_____

_____

and to maintain the said Improvement in good condition for a period of 1 year from the date of acceptance of the improvements.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall indemnify and hold harmless the said Obligee from and against all loss, costs, damages, and expenses whatsoever which it may suffer or be compelled to pay by reason of failure

of the said Principal to keep said work in repair for a one year period beginning _____

_____ against any and all defects of faulty workmanship or inferior material, then this obligation shall be void; otherwise to remain in full force and effect.

It is further agreed that if the said Principal or Surety herein shall fail to maintain said improvements in good condition for the said period of one year, and at any time repairs shall be necessary, that the cost of making said repairs shall be determined by the Owner, or some person or persons designated by the Owner to ascertain the same, and if, upon thirty (30) days notice, the said amount ascertained shall not be paid by the Principal or Surety herein, or if the necessary repairs are not made, that said amount shall become due upon the expiration of thirty (30) days, and suit may be maintained to recover the amount so determined in any Court of competent jurisdiction; and that the amount so determined shall be conclusive upon the parties as to the amount due on this bond for the repair of repairs included therein; and that the cost of all repairs

shall be so determined from time to time during the life of this bond, as the condition of the improvements may require. Signed, sealed and delivered the day and year first above written.

SEAL

_____

Principal

ATTEST:

_____ BY: _____

_____ _____

SEAL

_____

Surety

ATTEST:

_____ BY: _____

Attorney in Fact

_____ _____

SECTION B – STATE TERMS AND CONDITIONS

SC.10 GENERAL

The intent of this section is to outline the requirements set forth by the State of Oklahoma related to this project and not otherwise stated in the contract documents; however, this section does not claim to include all State laws. All requirements set for by the State of Oklahoma for bidding and construction shall be included by reference herein. If for any reason that the Federal and/or State requirements conflict with the requirements set forth in this contract, the more stringent of the requirements shall govern.

SC.11 MEASUREMENT AND PAYMENT

In accordance with Title 61 Oklahoma Statutes §113.1 and §226, the following language is supplemental to General Conditions GC.14 PAYMENT TO CONTRACTOR:

> Partial payments will be made in accordance with the General Provisions, provided, however, such retainage is not to exceed five percent (5%) of the amount of the payment due. No later than twenty-one (21) calendar days after a certificate of substantial completion is issued for the project or separate usable phase of the project and upon adequate performance of the Contractor and with approval of any applicable surety, retainage shall be released by the Owner to the Contractor less an amount no greater than one hundred fifty percent (150%) of the estimated costs to correct any incomplete or defective work as identified, itemized, and attached to the certificate of substantial completion. All remaining funds shall be released as each deficiency is satisfactorily completed. the Contractor shall release within ten (10) calendar days of receipt, the share of those funds that have been withheld from other entities. All other entities shall release within seven (7) calendar days of receipt, the share of those funds that have been withheld from other entities.

ITEM SS-101 SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

DESCRIPTION

101-1.1 The Contractor shall thoroughly review the approved Construction Safety and Phasing Plan (CSPP) and shall comply with approved CSPP. The Contractor shall certify such compliance by completing the attached SPCD and submitting to the Engineer for approval.

Contractor Safety Plan Compliance Documents

Owner Name: City of Alva

Airport: Alva Regional Airport (AVK)

Project Description: Runway and Taxiway Remarking

Contractor: _____

Each item listed below corresponds to a specific section of the approved CSPP. The Contractor shall certify that he/she will comply with each section of the approved CSPP. Each certified section with a "no" response must be fully explained in an attachment to the SPCD. The document shall be signed and dated by a principle or owner in the Contractor's company. All other requested information shall be completed by the Contractor and submitted to the Engineer for approval as part of the SPCD.

1. **Section 1 - Correspondence:** This project shall be completed in accordance with Section 1 "Coordination" of the approved Construction Safety Plan Compliance Document.

Owner:	
Contact:	**Phone:**
Engineer:	
Project Manager:	**Phone:**
Project Engineer:	**Phone:**
Construction Observer:	**Phone:**
Materials Testing:	**Phone:**
Contractor:	
Project Manager:	**Phone:**
Superintendent:	**Phone:**
Subcontractors:	**Phone:**
LIST ALL SUBS	

Yes_____ No_____

2. **Section 2 - Phasing:** This project shall be completed in accordance with Section 2 "Phasing" of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

3. **Section 3 – Areas of Operations Affected by Construction Activity:** This project shall be completed in accordance with Section 3 "Areas of Operations Affected by Construction Activity" of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

4. **Section 4 – Protection of Navigational Aids (NAVAIDS):** This project shall be completed in accordance with Section 4 “Protection of Navigational Aids (NAVAIDS)” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

5. **Section 5 – Contractor Access:** This project shall be completed in accordance with Section 5 “Contractor Access” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

6. **Section 6 – Wildlife Management:** This project shall be completed in accordance with Section 6 “Wildlife Management” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

7. **Section 7 – Foreign Object Debris (FOD) Management:** This project shall be completed in accordance with Section 7 “Foreign Object Debris (FOD) Management” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

8. **Section 8 – Hazardous Materials (HAZMAT) Management:** This project shall be completed in accordance with Section 8 “Hazardous Materials (HAZMAT) Management” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

9. **Section 9 – Notification of Construction Activities:** This project shall be completed in accordance with Section 9 “Notification of Construction Activities” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

10. **Section 10 – Inspection Requirements:** This project shall be completed in accordance with Section 10 “Inspection Requirements” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

11. **Section 11 – Underground Utilities:** This project shall be completed in accordance with Section 11 “Underground Utilities” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

12. **Section 12 – Penalties:** This project shall be completed in accordance with Section 12 “Penalties” of the approved Construction Safety Plan Compliance Document.

Yes_____No_____

13. **Section 13 – Special Conditions:** This project shall be completed in accordance with Section 13 “Special Conditions” of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

14. **Section 14 – Runway and Taxiway Visual Aids:** This project shall be completed in accordance with 14 “Runway and Taxiway Visual Aids” of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

15. **Section 15 – Marking and Signs for Access Routes:** This project shall be completed in accordance with Section 15 “Marking and Signs for Access Routes” of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

16. **Section 16 – Hazard Marking and Lighting:** This project shall be completed in accordance with Section 16 “Hazard Marking and Lighting” of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

17. **Section 17 – Protection of Safety Areas, Object Free Areas, Object Free Zones, and Approach / Departure Surfaces:** This project shall be completed in accordance with Section 17 “Protection of Safety Areas, Object Free Areas, Object Free Zones, and Approach / Departure Surfaces” of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

18. **Section 18 – Other Limitations on Construction:** This project shall be completed in accordance with Section 18 “Other Limitations on Construction” of the approved Construction Safety Plan Compliance Document.

Yes_____ No_____

I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, and that I shall comply with the approved Construction Safety and Plan.

Signed: _____
Contractor's Authorized Representative

Date: _____

_____
Print Name and Title of Contractor's Representative

END OF ITEM SS-101

ITEM SS-110 STANDARD SPECIFICATIONS

GENERAL

110-1.1 The standard specifications of the Oklahoma Department of Transportation (ODOT) are bound in a book titled 2009 Standard Specifications for Highway Construction. These specifications are referred to herein as "Standard Specifications." The latest edition shall apply. A copy of these "Standard Specifications" may be obtained from the ODOT at their customary charge.

INCORPORATION AND MODIFICATION

110-2.1 Certain parts of the Standard Specifications are appropriate for inclusion in these Technical Specifications. Such parts are incorporated herein by reference to the proper section or paragraph number. The individual specification numbers noted herein may be different from those in the latest edition of the "Standard Specifications." The most current specification number shall apply. Each such referenced part shall be considered to be a part of these Contract Documents as though copied herein in full.

110-2.2 Certain referenced parts of the Standard Specifications are modified in the Specifications that follow. In case of conflict between the Standard Specifications and the Specifications that follow, the Specifications that follow shall govern.

110-2.3 Individual material test numbers change from time to time. Use the latest applicable test.

110-2.4 Reference in the Standard Specifications to the “Department” is herein changed to the “Owner”.

MEASUREMENT AND PAYMENT

110-3.1 Provisions of the Standard Specifications shall be incorporated into these specifications for the list of items below.

Section 230 – Sodding and Sprigging

END OF ITEM SS-110

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ITEM SS-120 SITE PREPARATION

DESCRIPTION

120-1.1 This item covers the preparation of the site for construction of the proposed improvements. The attention of the bidder is directed to the necessity for careful examination of the entire project site to determine, at the time of bid preparation, the full extent of work to be done under the item "Site Preparation." The entire job site shall be cleared of all man-made obstructions and debris, of whatever nature, and made ready in all respects for the construction of the proposed improvements.

The item "Site Preparation" shall include:

1. Mobilization
2. Lighted Barricades and Closed Taxiway and Runway Markings
3. Contractor's Access/Haul Road
4. Contractor's Staging Areas
5. Lockout/Tagout Program
6. Airport Security Requirements
7. Airport Safety Requirements
8. Instrument Control
9. Removal and Disposal of Structures
10. Clean Up

CONSTRUCTION METHODS

120-2.1 MOBILIZATION. The Contractor shall consider and include his cost for providing personnel, equipment, materials, bonds, etc. required for the prosecution of the work under this item.

120-2.2 LIGHTED BARRICADES AND CLOSED TAXIWAY AND RUNWAY MARKINGS. The Contractor shall furnish, install, maintain, and remove closed taxiway and runway markings and lighted barricades in accordance with details on the plans and as directed by the Engineer. The closed runway markers shall be aviation yellow, nylon-reinforced vinyl. The markers shall be secured to the pavement/ground as shown on the plans and as directed by the Engineer. The lighted barricades shall be constructed and installed as shown on the plans. All lighted barricades and closed taxiway and runway markings shall be constructed in accordance with AC 150/5370-2F Operational Safety on Airports During Construction.

All work involved in the furnishing, installation, maintenance, and removal of lighted barricades, barrels and closed runway markings will not be measured for separate payment, but will be considered subsidiary to the bid item "Site Preparation."

120-2.3 CONTRACTOR'S ACCESS/HAUL ROAD. The Contractor shall layout, construct, maintain, and repair all access/haul roads needed to construct the work. The existing access roads shown on the plans shall be repaired, as determined necessary by the Engineer, at the close of the project. All such work, including all materials and labor, involved in the layout, construction, maintenance, and repair of the Contractor's access/haul roads will not be measured for separate payment but will be considered subsidiary to the bid item "Site Preparation." Temporary pipe culverts shall be installed and maintained as required and shall be of the size as directed by the Engineer. The type of pipe used for temporary pipe shall be at the option of the Contractor. Temporary pipe culverts will not be measured for separate payment, but will be considered subsidiary to the access/haul road. All temporary pipe culverts shall be removed by the Contractor and shall remain his property at the close of the project.

120-2.4 CONTRACTOR'S STAGING AREAS. The areas designated in the plans or by the Engineer as the Contractor's staging area shall be cleared and graded by the Contractor as needed for use by the Contractor

in constructing the work on this project. All areas used or otherwise occupied by the Contractor for his operations shall be cleaned, regraded, and seeded, as directed by the Engineer, prior to the final acceptance of the project by the Airport. All work involved in the preparation and restoration of areas used or occupied by the Contractor, including clearing, grubbing, regrading, seeding, and installing and removing fence, will not be measured for separate payment but will be considered subsidiary to the bid item "Site Preparation."

120-2.5 LOCKOUT / TAGOUT PROGRAM. The Contractor shall submit a complete copy of an electrical energy source Lockout/Tagout Program in accordance with Part 1910 – Occupational Safety and Health Standards (OSHA) Subpart S – Electrical, that meets the requirements of 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout), including requirements listed in 1910.331 through 1910.335. Implementation of the Lockout/Tagout Program and the related safety requirements are the sole responsibility of the Contractor. All work involved in the preparation and implementation of the Lockout/Tagout Program will not be measured for separate payment, but will be considered subsidiary to the bid item "Site Preparation."

120-2.6 AIRPORT SECURITY REQUIREMENTS. The Contractor shall abide by the Airport Security requirements that are outlined in the Construction Safety and Phasing Plan (CSPP) of the plans. Any costs associated with the Airport Security requirements will not be measured for separate payment but will be considered subsidiary to the bid item "Site Preparation."

120-2.7 AIRPORT SAFETY REQUIREMENTS. The Contractor shall abide by the Airport Safety requirements that are outlined in the Construction Safety and Phasing Plan (CSPP) of the plans. All costs associated with the Airport Safety requirements will not be measured for separate payment but will be considered subsidiary to the bid item "Site Preparation."

120-2.8 INSTRUMENT CONTROL. The Contractor will be furnished survey baselines and benchmarks to control the work as shown on the Plans. The Contractor shall be responsible for the additional instrument control necessary to layout and construct the work. The Contractor's instrument control of the work shall not be measured for separate payment, but will be considered subsidiary to the bid item "Site Preparation".

120-2.9 REMOVAL AND DISPOSAL OF STRUCTURES. This work shall consist of the removal and satisfactory disposal of utility poles; signs, sign supports, sign foundations; curb and curb and gutter; fence; driveways; guardrail; retaining walls; sidewalks; Portland cement concrete or asphalt concrete pavements; manholes; drainage structures (including reinforced concrete channels, headwalls, and wingwalls); concrete or masonry foundations (including foundations of poles or signs to be removed) or slabs; concrete ducts and pipe culverts, all of which are not designated or permitted to remain. The Contractor shall make his own estimate of the work required for the removal of structures which conflict with the proposed construction. All structures required to be removed may not be designated as such in the plans.

The provisions of this section shall not apply to underground petroleum storage tanks.

The attention of the bidder is directed to the necessity for careful examination of the entire site to determine, at the time of bid preparation, the full extent of work to be accomplished. The entire site shall be cleared of all man-made obstructions and debris, of whatever nature, and prepared in all respects for the construction.

The Contractor shall not unnecessarily interfere with the use of any adjacent sidewalks, streets, or roads.

Materials removed will become the property of the Contractor and shall be removed from the job site, unless specifically designated otherwise.

All surface items such as curb, curb and gutter, driveways, parking areas, walks, steps, asphalt and PCC pavement, and walls shall be separated or broken away from the adjacent part of any structure designated

to remain in place by a vertical saw cut along the line designated by the Engineer. The edge of the structure left in place shall be approximately vertical with no abrupt changes in alignment. Any damage to or removal of the structure designated to remain in place shall be repaired or replaced at no cost to the Owner.

Holes, ditches, or other abrupt changes in elevation caused by the removal operations that could obstruct drainage or be considered hazardous or unsightly shall be backfilled, compacted, and left in a workmanlike condition.

Existing concrete ducts and parts thereof that interfere with the new construction shall be removed.

Existing pipe culverts or parts thereof that interfere with the new construction shall be removed.

Where existing pipe culverts are to be extended or otherwise incorporated into the new work, only such part of the existing structure shall be removed as to provide a proper connection to the new work. The connecting edges or joints shall be cut, chipped, and trimmed to the required lines and grades without weakening or damaging the part of the structure to be retained.

For a pipe culvert extension, the headwall and the attached end joint of concrete pipe or the flared end section on all types of pipe shall be removed to accommodate the extension. This work will not be paid for directly but will be considered included in the items involved in the culvert extension. This item includes any additional construction required to connect existing pipes to the constructed drainage system.

Trenches or voids resulting from the removal or demolition of existing culverts or other structures shall be filled with approved material placed in layers in accordance with Item P-152.

Masonry and reinforced concrete foundations shall be obliterated, or if in fill sections, may be left in place if covered by not less than 2 feet of embankment.

Concrete foundations for poles to be removed shall be obliterated to a depth of 2 feet below finished grade or as required to accommodate new construction.

The removal and disposal of the various items covered by this specification will not be measured for separate payment, but will be subsidiary to the bid item “Site Preparation”.

120-2.10 CLEAN UP. From time to time, the Contractor shall clean up the site in order that the site presents a neat appearance and that the progress of work will not be impeded. One such clean up shall immediately precede final inspection.

Immediately following acceptance of the work by the Owner, the Contractor shall remove all temporary equipment, surplus materials, and debris resulting from his operations, and leave the site in a condition fully acceptable to the Owner.

MEASUREMENT AND PAYMENT

120-3.1 . Based upon the contract lump sum price for “SS-120 Site Preparation” partial payments will be allowed as follows:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by 90-11, the final 10%.

Price shall be full compensation for furnishing all labor, tools, equipment and incidentals necessary to complete the work

Payment will be made under:

Item SS-120-3.1 Site Preparation - per Lump Sum

END OF ITEM SS-120

ITEM SS-300 BASIC ELECTRICAL REQUIREMENTS

DESCRIPTION

300-1.1 This item shall consist of furnishing and installing complete electrical systems as defined in the plans and in these specifications. The work includes the installation, connection and testing of new electrical systems, equipment and all required appurtenances to construct and demonstrate proper operation of the completed electrical systems.

300-1.2 The Contractor shall maintain current copies of all referenced and applicable advisory circulars and standards on the job site. The Contractor is responsible to make known to the Engineer any conflict between plans and specifications that he observes or of which he is made aware.

300-1.3 This work shall consist of lockout/tagout and constant current regulator calibration procedures at the airport electrical vault in accordance with the design and details shown in the plans and in compliance with these specification documents.

EQUIPMENT AND MATERIALS

300-2.1 STANDARDS.

a. Applicable National Fire Protection Association (NFPA) codes, including but not limited to:
   (1) NFPA 70 - National Electrical Code.
   (2) NFPA 70E - Standard for Electrical Safety in the Workplace.
   (3) NFPA 101 - Life Safety Code.
   (4) Internet Website: http://www.nfpa.org
b. Applicable Code of Federal Regulations (CFR) codes, including but not limited to:
   (1) 29 CFR 1910 - Occupational Safety and Health Standards (OSHA)
   (2) 29 CFR 1926 - Safety and Health Regulations for Construction.
   (3) Internet Website: http://www.gpoaccess.gov/cfr/index.html
c. ANSI/IEEE C2 - National Electrical Safety Code.
d. NECA 1 – Standard for Good Workmanship in Electrical Construction.
e. Applicable Federal, State and Local Electrical Codes.
f. Applicable City Electrical Code.
g. Applicable City Ordinances pertaining to electrical work.
h. Applicable Federal, State and Local - Environmental, Health and Safety Laws and Regulations.

Contractor shall utilize the most current editions of standards, which are current at time of bid and as recognized by the Authority Having Jurisdiction for the respective standard.

300-2.2 GENERAL.

a. Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified and listed under Advisory Circular (AC) 150/5345-53, Airport Lighting Equipment Certification Program, current version on the date that the submittals are received by the Engineer.

b. Airport lighting equipment and materials shall also meet the Buy American Preference requirements in 49 USC 50101 and the Aviation Safety and Capacity Expansion Act. The equipment shall be approved and listed on the FAA “Equipment Meeting Buy American Requirements” list located at *www.faa.gov/airports/aip/procurement/federal_contract_provisions/*, current version on the date that the submittals are received by the Engineer, or the Contractor may submit a signed formal letter from the manufacturer that clearly lists the specific equipment, model number, location where it is manufactured,

and statement certifying that the equipment and/or materials meet the Buy American Preference requirements.

c. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the Engineer. All equipment and materials shall be new and meet applicable manufacturer's standards. All other electrical components and products, not covered under the FAA equipment certification program, shall be tested and listed by an OSHA accepted, nationally recognized testing laboratory (NRTL) to conform to the standards indicated in these contract documents and to the industry standards required in the NEC, NEMA, IEEE, and applicable FAA advisory circulars.

d. Manufacturer's certifications shall not relieve the Contractor of the Contractor's responsibility to provide materials in accordance with these specifications and acceptable to the Engineer. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the Engineer and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

e. All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components or electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be boldly and clearly made with arrows or circles (highlighting is not acceptable). Contractor is solely responsible for delays in project accruing directly or indirectly from late submissions or resubmissions of submittals.

f. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the Contract Documents plans and specifications. The Engineer reserves the right to reject any and all equipment, materials or procedures, which, in the Engineer's opinion, does not meet the system design and the standards and codes, specified herein.

g. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

h. After approval of submitted equipment, the Contractor shall supply the following Operation and Maintenance Manual documentation to the Owner. The documentation shall include:

(1) Approved Submittal and Shop Drawings
(2) Cable Splicer Qualifications, Type and Voltage
(3) State Contractors License with Electrical Classification
(4) Master, Journeyman and Apprentice Electrician Licenses and Certifications
(5) Lockout/Tagout Program
(6) Regulator Load and Calibration Reports for testing, checking and adjusting all regulators in the electrical vault
(7) Megger Test Reports
(8) Ground Rod Test Reports
(9) Installation Manuals
(10) Operation Manuals
(11) Maintenance Manuals
(12) Parts Lists, including recommended spare parts. Recommended spare parts shall be furnished with the respective equipment.

i. After approval of the O&M Manuals, the Contractor shall provide three (3) complete electronic copies of all documentation in Adobe PDF file format on CD-R (non-rewriteable) discs storage media. The electronic files shall contain searchable text and include a hyperlink index for ease in locating information with the PDF file.

j. All requirements herein Item SS-300 shall be applicable to all referenced sections in these contract documents and applicable to all sections which reference Item SS-300.

k. The Contractor is the single source of responsibility for the installation and integration of the airport's lighting, power, and control systems. New airport lighting equipment and materials shall be fully compatible with all other new and existing airport lighting equipment and systems. Any non-compatible components furnished by the Contractor shall be replaced at no additional cost to the Owner with a similar unit that is approved by the Engineer and compatible with the remainder of the airport lighting system.

300-2.3 OPERATION AND MAINTENANCE DATA.

a. Installation manual: Description of function, installation and calibration manuals, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.

b. Operations manual: Manufacturer's printed operating instructions and procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; summer and winter operating instructions; and all programming and equipment settings.

c. Maintenance manual: Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.

d. Service manual: Servicing instructions and lubrication charts and schedules, including the names and telephone numbers of personnel to contact for both routine periodic and warranty service for equipment and materials provided under this Specification.

e. Final approved equipment shop drawings, clearly labeled.

f. Final test reports, clearly labeled, including motor certification tests.

g. Final certified calibration sheets for all equipment and instruments.

300-2.4 CONSTANT CURRENT REGULATORS. The output power rating of the regulators shall be as noted on plans and meet the criteria set forth in the most current version of AC 150/5345-10, Specification for Constant Current Regulators and Regulator Monitors. The output power rating of all existing regulators within the electrical vault shall be tested, checked and adjusted to meet the AC criteria prior to placing the airfield lighting circuits into service.

The Contractor shall submit his initial regulator load test reports prior to any work on the electrical system. The Contractor shall test all regulators within the electrical vault and submit these reports to the Engineer prior to Contractor proceeding with his work.

The Contractor shall calibrate all new and existing regulators following construction and prior to final acceptance testing in accordance with FAA AC 150/5340-26 "Maintenance of Airport Visual Aid Facilities" and manufacturer's recommendations. Contractor shall submit calibration report to Engineer.

After final acceptance testing has been completed, the Contractor shall complete and submit his final regulator load test reports to the Engineer for all regulators and insert copies of the final regulator load test reports in the Operation and Maintenance Manuals.

CONSTRUCTION METHODS

300-3.1 LOCKOUT/TAGOUT PROGRAM. The Contractor shall provide a complete copy of an electrical energy source Lockout/Tagout Program to the Owner, with copy to the Engineer. The document shall clearly identify the on-site master electricians and their contact information, including office and mobile telephone numbers.

The Lockout/Tagout Program shall comply with Part 1910 – Occupational Safety and Health Standards (OSHA) Subpart S – Electrical, and meet the requirements of 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout), including requirements listed in 1910.331 through 1910.335.

Implementation of the Lockout/Tagout Program and all other related safety requirements are the sole responsibility of the Contractor.

300-3.2 SAFETY PROGRAM. The Contractor shall implement an electrical safety program that complies with NFPA 70E and 29 CFR 1926.

Implementation of the Electrical Safety Program, determining and providing proper Personal Protective Equipment (PPE), training and enforcing personnel to wear the prescribed PPE, conducting work area safety inspections (including correcting deficiencies), and all other related safety requirements are the sole responsibility of the Contractor.

All work involved in the preparation and implementation of the safety program will not be measured for separate payment, but will be considered subsidiary to the lockout/tagout bid item.

300-3.3 GENERAL. In general, the various electrical equipment and material to be installed by the various trades under this specification shall be run as indicated, as specified herein, as required by particular conditions at the site, and as required to conform to the generally accepted standards so as to complete the work in a neat and satisfactory manner.

The drawings and specifications are complementary; any work required by one, but not by the other, shall be performed as though required by both.

The bidder shall inspect the site, thoroughly acquaint himself with conditions to be met and work to be accomplished. Failure to comply with this shall not constitute grounds for any additional payments.

All salvage and equipment removed by the work shall remain the property of the Owner. Material removed from the project shall be stored on the project site where and as directed. Debris shall be removed from the job site and disposed of by the Contractor.

The Contractor shall maintain his work area clean and orderly at all times. Debris shall be removed promptly. The electrical system shall be thoroughly cleaned inside and outside of all enclosures to remove all metal shavings or other work debris, dust, concrete splatter, plaster, paint and lint.

The Contractor shall do all excavating and backfilling made necessary by electrical work and shall remove all surplus or supply any earth required to establish the proper finished grade.

An approved anti-seize compound shall be used on all threads to prevent equipment and thread damage.

Equipment shall be installed in accordance with manufacturer's recommendation. Make all final electrical connections and coordinate all items with other trades.

Correct unnecessary damage caused due to installation of work, brought about through carelessness or lack of coordination. All openings, sleeves, and holes to be properly sealed, fire proofed and water proofed. Any water leaks arising from project construction will be immediately corrected to the satisfaction

of the Owner and the Engineer.

300-3.4 BACKFILL, COMPACTION, AND RESTORATION. Trenches shall be backfilled and compacted in 6" layers to 90% maximum density for cohesive soils and to 100% maximum density for non-cohesive soils, as determined by ASTM D1557. The in-place field density shall be determined in accordance with ASTM D1556, D2167, or D6938.

Backfilling from two directions will not be allowed. No backfilling will be accomplished without the approval of the Engineer or Construction Observer. The Contractor shall ensure all trenches are inspected prior to being covered and prior to encasement. Any uninspected trenches which are prematurely covered shall be exposed for inspection at the Engineer and Owner's convenience at no additional cost to the Owner. The Construction Observer will coordinate with the Contractor for advance scheduling of trench inspection.

Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

300-3.5 CABLE AND UTILITY COORDINATION. The existing and the proposed locations of lighting cable are approximate. The Contractor shall be responsible for field locating and identifying the existing lighting circuits to determine their exact routing. The Contractor shall also be responsible for maintaining the lighting systems in a working condition until the new lighting circuits have been installed and tested. The Contractor shall proactively and expeditiously accomplish this cable identification work prior to performing any modifications to the lighting circuits. Coordinate identification work with the Owner and Engineer and make all corrections, additions, etc. on the as-built drawings.

Underground cable and utilities exist within and adjacent to the limits of construction. An attempt has been made to locate these cables and utilities on the Plans. All existing cable and utilities may not be shown on the Plans and the location of the cables and utilities shown may vary from the location shown on the Plans. Prior to beginning of any type of excavation, the Contractor shall contact the utilities, the airport maintenance staff, FAA field personnel and other organizations as required and make arrangements for the location of the utilities on the ground. The Contractor shall maintain the cable and utility location markings until they are no longer required.

The Contractor shall replace or repair any underground cable or utility that has been damaged by the Contractor during excavation to the satisfaction of the owner of the cable or utility at no additional cost to the Owner.

300-3.6 AS-BUILT DRAWINGS. Before work is started, the Contractor shall obtain at his expense one (1) full-sized set of prints for As-Built records; the Engineer will supply the tracings at printing cost to the Contractor.

The Contractor shall locate all underground and concealed work, identifying all equipment, conduit, circuit numbers, motors, feeders, breakers, switches, and starters. The Contractor will certify accuracy by endorsement. As-Built drawings shall be correct in every detail, so Owner can properly operate, maintain, and repair exposed and concealed work.

The As-Built drawings shall indicate all control system labeling and marking.

The Contractor shall store the As-Built drawings on the site. Drawings shall not be rolled. Make corrections, additions, etc., with pencil, with date and authorization of change.

As-Built drawings must be submitted to Engineer before project will be accepted.

Minor deviations from the Plans and Specifications shall be as approved by the Engineer.

Upon completion of the installation, the Contractor shall adjust the systems to the satisfaction of the

Engineer.

300-3.7 TESTING.

General Electrical Testing: Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification and certify compliance with test parameters. Tests shall be conducted in the presence of the Engineer and shall be to his/her satisfaction. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest. Perform infrared scan tests and inspections of service and power distribution equipment at the respective hangars and provide reports. Electrical equipment will be considered defective if it does not pass tests and inspections. Reports shall include notations of deficiencies, remedial action taken and observations after remedial action.

System and Equipment Testing: All installations shall be fully tested by continuous operation for not less than 24 hours as completed systems prior to acceptance. These tests shall include the functioning of each control not less than 10 times.

Airport lighting equipment and special systems shall be tested in accordance with applicable FAA Advisory Circular requirements and the manufacturer's installation instructions. These tests shall also include those system requirements listed within AC 150/5340-26 Maintenance of Airport Visual Aid Facilities.

Test equipment and instruments utilized by the Contractor shall have been calibrated following the manufacturer's recommended schedule to verify their accuracy prior to performing the testing work. The Contractor shall provide instrument calibration certificates on test equipment when requested by the Engineer. Retesting work due to inaccurate or defective instruments shall be performed by the Contractor to the satisfaction of the Engineer at no additional cost to the Owner.

a. Regulator Calibration:

The Contractor shall calibrate new and existing regulators utilizing the enclosed "Constant Current Regulator Calibration Report". Refer to the material section on constant current regulators for additional requirements.

b. Megger Testing:

The Contractor shall perform megger testing on each existing regulator circuit prior to any work on the electrical system. This information shall be recorded and documented by the Contractor and submitted to the Engineer. The Contractor shall perform megger tests on each regulator circuit after the acceptance test period. This acceptance test information shall be recorded and documented by the Contractor and submitted to the Engineer. Megger test shall be performed in accordance with the requirements of Item L-108.

The Contractor shall submit his initial megger test reports on the enclosed "Insulation-Resistance Test Report" form prior to any work on the electrical system. This report shall be submitted to the Engineer and approved by the Owner prior to Contractor proceeding with his work.

After final acceptance testing has been completed, the Contractor shall complete and submit his final megger test reports to the Engineer and insert copies of the initial and final megger test reports in the Operation and Maintenance Manuals.

Megger testing shall be performed using an insulation tester, such as a Fluke 1587 Insulation Multimeter, or approved equal.

Refer to the minimum guaranteed insulation resistance requirements through the end of the contract warranty period as listed in Item L-108.

For existing circuit insulation resistance requirements, refer to “Existing Circuits” section of Item L-108.

The installations shall be tested in operation as a completed unit prior to acceptance. Tests shall include taking megger and voltage readings in accordance with manufacturer’s requirements. Testing equipment shall be furnished by the Contractor. The insulation resistance to ground for 600V rated cables shall be not less than 100 megohms when measured per NETA standards.

c. Ground Rod Impedance Testing:

The enclosed “Ground Rod Impedance Test Report” form shall be used and testing shall be performed in the presence of the Engineer.

As-Built drawings shall indicate the location of all installed ground rods. Each ground rod shall have a unique identifier that corresponds with its submitted ground impedance test report.

Three-pole fall-of-potential testers that can measure the ground resistance of a ground rod using auxiliary electrodes (staked testing), such as a Fluke 1621 Earth Ground Tester, shall be used for testing individual dedicated equipment ground rods at fixtures and equipment, or for testing isolated counterpoise ground rods not yet connected to the counterpoise wire.

Clamp-on testers that can measure the ground resistance of a ground rod without using auxiliary ground rods (stakeless testing), such as a Fluke 1630 Earth Ground Clamp Meter or approved equal, shall be used for testing counterpoise ground rods which have already been connected to the counterpoise wire, or ground ring ground rods which have already been connected to the established ground ring system.

Insulation resistance testers for 5kV series circuits shall utilize the 1000V DC source output for testing. The test equipment shall be submitted for review and approval by the Engineer prior to performing the tests.

Ground impedance test equipment shall be submitted for review and approval by the Engineer prior to performing the tests.

If the ground rod’s impedance exceeds 25 ohms, an additional rod shall be driven in a location suitable and approved by the Engineer. However, the additional rod must satisfy the requirements of NEC 250.53 and not be less than 6 feet away from any other ground rod electrode. Additional ground rods shall not be measured for separate payment but shall be considered subsidiary to the counterpoise or respective equipment pay item.

The Contractor shall perform additional tests if required and requested by the Engineer at no additional cost.

The Contractor shall coordinate with the resident Engineer to approve tests daily before proceeding. The Contractor shall fill out a separate test report for each date. Test reports shall be submitted weekly to the Engineer.

d. Cable Pulling Tension Values Log:

The enclosed “Cable Pulling Tension Values Log” form shall be used for monitoring cable pull tension values in the presence of the Engineer. Refer to Item L-108 for additional requirements.

300-3.8 INSPECTION FEES AND PERMITS. Obtain and pay for all necessary permits and inspection fees required for electrical installation.

300-3.9 WORK SUPERVISION.

State of Oklahoma: The electrical contractor (whether the general contractor or a subcontractor) shall be a licensed contractor in the state of Oklahoma having an electrical classification suitable for performing the work required in these contract documents.

The Contractor shall designate in writing the qualified electrical supervisor who shall provide supervision to all electrical work on this project. The minimum qualifications for the electrical supervisor shall be a master electrician as defined by Oklahoma State Department of Health. The supervisor or his appointed alternate possessing at least a journeyman electrician license shall be on site whenever electrical work is being performed. The qualifications of the electrical supervisor shall be subject to approval of the Owner and the Engineer.

All unlimited electrical contractor and journeyman shall be licensed in accordance with Oklahoma Board Requirements. No unlicensed electrical workers shall perform electrical work on this project. Apprentice electricians in a ratio of not more than one apprentice per journeyman electrician will be allowed if the apprentices are licensed and actively participating in an apprenticeship program recognized and approved by the Oklahoma State Department of Health, Electrical Division, Construction Industries Board, Electrical Examining Committee.

Refer to specification section L-108-2.5 “Splicer Qualifications” for additional requirements.

METHOD OF MEASUREMENT

300-4.1 The quantity of lockout/tagout and constant current regulator calibration procedures to be paid for shall consist of all lockout/tagout procedure work and all constant current regulator calibration work completed in place, accepted and ready for operation. This item does not include measurement for constant current regulator equipment.

BASIS OF PAYMENT

300-5.1 Payment will be made at the contract unit price for each complete item, measured as provided above, and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item to the satisfaction of the Engineer.

Payment will be made under:

Item SS-300-5.1	Lockout/Tagout and Constant Current Regulator Calibration Procedures – per Lump Sum

MATERIAL REQUIREMENTS

Fed.Spec.J-C-30	Cable and Wire, Electrical (Power, Fixed Installation)
Fed. Spec. W-C-1094	Conduit and Conduit Fittings; Plastic, Rigid
Fed. Spec. W-P-115	Panel, Power Distribution

Fed. Std. 595	Colors
Underwriters Laboratories Standard 6	Rigid Metal Conduit
Underwriters Laboratories Standard 514	Fittings for Conduit and Outlet Boxes
Underwriters Laboratories Laboratories Standard 651	Schedule 40 and 80 Rigid PVC Conduit (for Direct Burial)
Underwriters Laboratories Standard 1242	Intermediate Metal Conduit
CFR 1910	Occupational Safety and Health Regulations
CFR 1926	Safety and Health Regulations for Construction
ANSI/IEEE C2	National Electrical Safety Code
NFPA 70	National Electrical Code (NEC)
NFPA 70E	Standard for Electrical Safety in the Workplace
NFPA 101	Life Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
29 CFR 1910	Occupational Safety and Health Standards (OSHA)
29 CFR 1926	Safety and Health Regulations for Construction

FAA ADVISORY CIRCULARS

AC 150/5300-13	Airport Design
AC 150/5340-18	Standards for Airport Sign Systems
AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-3	Specification for L-821 Panels for Control of Airport Lighting
AC 150/5345-5	Specifications for Airport Lighting Circuit Selector Switch
AC 150/5345-7	Specification for L-824 for Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-10	Specification for Constant Current Regulators and Regulator Monitors
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors

AC 150/5345-28	Standard for Precision Approach Path Indicator (PAPI) Systems
AC 150/5345-39	Specification for L-853 Runway and Taxiway Retroreflective Markers
AC 150/5345-42	Specification for Airport Light Base and Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-44	Specification for Taxiway and Runway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Isolation Transformers for Airport Lighting Systems
AC 150/5346-49	Specification L-854, Radio Control Equipment
AC 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
AC 150/5345-53	Airport Lighting Equipment Certification Program
AC 150/5345-56	Specification for L-890 Airport Lighting Control and Monitoring System (ALCMS)

END OF ITEM SS-300

CONSTANT CURRENT REGULATOR CALIBRATION REPORT

Standard Requirements: FAA AC 150/5340-26 (latest edition) Maintenance of Airport Visual Aid Facilities

Owner / Sponsor: _____ Engineer: Garver, LLC_____

Airport:_____ Contractor: _____

Project Title: _____ Garver Project Number:_____

Vault ID / Location: _____ Date: _____

Weather / Site Conditions: _____ Last Two Weeks of Rain: _____inches

Constant Current Regulator #: _____ Serves: _____

	Completed	Comments
1. Check all control equipment for proper operation.	☐	_____
2. Perform short-circuit test. Record results and recalibrate if necessary.	☐	_____
3. Perform open-circuit test on regulators with open circuit protection. Open circuit protective device should de-energize the regulator. Record results.	☐	_____
4. Check and record regulator input voltage and current.	☐	_____
Input Voltage: _____ Input Current: _____		
5. Check and record regulator output load. (ONLY if regulator has monitoring package)	☐	_____
Volt-Amperes: _____		
6. Check and record output current on each brightness step. If output current is outside of the allowable range, adjust the regulator's on-board potentiometer to re-calibrate the output current within the allowable range. Re-record the new output current on this form.	☐	_____

3-Step CCR			5-Step CCR				
B10: _____	B30: _____	B100: _____	1: _____	2: _____	3: _____	4: _____	5: _____
Nominal: 4.8A	5.5A	6.6A	2.8A	3.4A	4.1A	5.2A	6.6A

Tested By: _____ (Signature and Date)

Test Equipment: _____ (Manufacturer and Model No.)

Engineer Witness: _____ (Signature and Date)

Owner / Sponsor Witness: _____ (Signature and Date)

INSULATION RESISTANCE TEST REPORT

Owner / Sponsor: _____ Engineer: Garver, LLC_____

Airport:_____ Contractor: _____

Project Title: _____ Garver Project Number:_____

Vault ID / Location: _____ Date Initial / Final Tests: _____

Weather / Site Conditions (Initial Test): _____ Last Two Weeks of Rain:_____inches

Weather / Site Conditions (Final Test): _____ Last Two Weeks of Rain:_____inches

		Initial Test Results		Final Test Results	
	Circuit Designation and Color Code	Regulator Size (kW)	Megger Reading Before Field Work (Megohms)	Regulator Size (kW)	Megger Reading After Field Work (Megohms)
1					
2					
3					
4					
5					
6					
Tested By:					
Test Equipment:					
Engineer Witness:					
Owner/Sponsor Witness:					

Provide signature/date and manufacturer/model no. as required in the fields above.

Initial Test Record – Owner Disposition

Owner / Sponsor: _____ (Signature and Date)

Check one only: ☐ Proceed with Installation ☐ Hold

GROUND ROD IMPEDANCE TEST REPORT

Owner / Sponsor: _____ Engineer: Garver, LLC

Airport: _____ Contractor: _____

Project Title: _____ Garver Project Number: _____

Date: _____ Weather / Site Conditions: _____

Fall-of-Potential Style Tester (F):
Manufacturer: _____ Model #: _____

Clamp-On Style Tester (C):
Manufacturer: _____ Model #: _____

Ground Rod #	Test Equipment Style (F or C)	Impedance Value (Ohms)	Ground Rod #	Test Equipment Style (F or C)	Impedance Value (Ohms)

Tested By:	
Engineer Witness:	

Provide signature/date in the fields above.

CABLE PULLING TENSION VALUES LOG

Owner / Sponsor: _____ Engineer: Garver, LLC

Airport: _____ Contractor: _____

Project Title: _____ Garver Project Number: _____

Date: _____ Weather / Site Conditions: _____

Dynamometer
Manufacturer/Model #: _____

Cable / Wire
Manufacturer: _____

From / To Locations	Wire/Cable Size	Length of Pull	Pull Method	Maximum Value	Measured Value
Tested By:					
Engineer Witness:					

Provide signature/date in the fields above.

ITEM SS-301 ELECTRICAL DEMOLITION AND RELOCATION WORK

DESCRIPTION

301-1.1 This item shall consist of the removal and satisfactory disposal of existing runway and taxiway edge lights, and other incidentals, all of which are not designated or permitted to remain, in accordance with this specification, the referenced specifications and drawings, and applicable advisory circulars. This work shall include the removal of indicated equipment, materials, and incidentals necessary for a complete item removal, including all restoration work, as a completed unit to the satisfaction of the Engineer.

301-1.2 This item shall also consist of the relocation of existing lights and incidentals, in accordance with this specification, the referenced specifications and drawings, and applicable advisory circulars. This work shall include the removal and storage of indicated equipment and materials, and reinstallation at the new location, including all incidentals necessary for a complete relocation, as a completed unit to the satisfaction of the Engineer.

301-1.3 Additional details pertaining to the lighting system covered in this item are contained in the advisory circular, AC 150/5340-30, Design and Installation Details for Airport Visual Aids.

301-1.4 The Contractor shall maintain current copies of all referenced and applicable advisory circulars on the job site. The Contractor is responsible to make known to the Engineer any conflict between plans and specifications that he observes or of which he is made aware.

MATERIALS

301-2.1 All backfill and repair materials used in electrical demolition, repair and restoration work shall comply with the referenced specifications and be approved by the Engineer.

Airport lighting equipment and materials shall meet the requirements outlined in Item SS-300.

CONSTRUCTION METHODS

301-3.1 GENERAL. The Contractor shall remove all existing underground cable, which is unused or rendered unusable by this project, when such is exposed or made accessible during the course of this work. All such wiring removed shall become property of the Contractor and shall be immediately removed from the project. Wiring in conduit shall be removed as indicated or if new wiring is shown to be installed in its place. Existing wiring shall not be reused or reinstalled.

Wiring not exposed shall be abandoned in place, if a reasonable effort will not remove it. No measurement or payment will be made for this cable removal work. Damage to turf or other systems will not be permitted in order to salvage or retrieve existing cable.

No demolition shall be started until the removal and/or relocation work has been laid out and approved by the Engineer. All material shall be disposed of off-site. All hauling and disposal will be considered a necessary and incidental part of the work. Hauling cost shall be considered by the Contractor and included in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

Any damage to electrical equipment, systems, structures, conduits, cables, and accessories or other utilities, designated to remain in place, shall be repaired or replaced expeditiously at no additional cost to the Owner and to the satisfaction of the Owner and Engineer.

Holes, ditches, or other abrupt changes in elevation caused by the removal operations that could obstruct drainage or be considered hazardous or unsightly shall be backfilled, compacted, and left in a workmanlike condition.

Trenches or voids resulting from the removal or demolition of existing electrical equipment or other structures shall be filled with approved material placed in layers in accordance with these contract documents.

301-3.2 REMOVAL OF LIGHT FIXTURES AND EQUIPMENT. Light fixtures and other equipment which are to be removed shall be carefully excavated. All concrete anchors shall be removed by the Contractor. The removed lights, isolation transformers and wiring harnesses shall then be given to the Owner, or properly disposed of if so directed by the Owner. The ground in the area of the removed lighting equipment shall be backfilled and properly compacted. Light fixtures and equipment which are to be relocated shall be stored on site and reinstalled with new lamps, new transformers, and all other new required accessories as indicated in the plans.

Following removal of lights, the primary airfield circuit shall be spliced as indicated in the plans to ensure operation of the airfield series circuit.

301-3.3 REMOVAL OF EXISTING EQUIPMENT. The Contractor shall carefully remove all salvageable equipment as indicated in the plans. Any equipment that is damaged during the removal and/or relocation operation shall be subject to a reduction in payment for removal and/or relocation of the equipment. All equipment that is removed during this project shall be transported to a site on the Airfield or removed from the Airfield and properly disposed of as directed by the Owner and the Engineer.

301-3.4 RELOCATION OF EXISTING EQUIPMENT. Existing equipment that is to be relocated shall be carefully disconnected from the existing electrical system. The equipment shall be stored on site in an enclosed area protected from the weather as directed by the Owner and Engineer. The Contractor shall remove existing concrete anchors and shall backfill and compact these areas to match existing. The electrical power circuit shall be field located and extended to the new installation location unless otherwise noted in the Plans. Coordinate the extension of the electrical service with the extension of the electrical duct serving the equipment and install duct, splice and cable markers to mark the new complete route.

Refer to the plans for additional installation requirements concerning the relocation of existing lights, signs, systems and incidentals.

Any equipment that is damaged during the relocation operation shall be replaced by the Contractor at his expense to the satisfaction of the Owner and Engineer.

METHOD OF MEASUREMENT

301-4.1 The quantity of existing lights, removed, to be measured under this item shall be the number of each complete unit removed, and accepted by the Engineer. Measurement shall include resplicing the primary circuit at the removal location as indicated in the plans.

301-4.2 The quantity of existing lights, relocated, to be measured under this item shall be the number of each complete unit removed, stored, and reinstalled at the new location, complete with new isolation transformer, new lamps, new stakes, new connectors, new safety ground rods, and new appurtenances, as completed units in place, ready for operation, and accepted by the Engineer. This work shall also include removal of the old concrete anchors and appurtenances.

BASIS OF PAYMENT

301-5.1 Payment will be made at the contract unit price for each complete item, measured as provided

above, and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item to the satisfaction of the Engineer.

Payment will be made under:

Item SS-301-5.1 Existing Stake Mounted Edge Light, Removed -- per Each

Item SS-301-5.2 Existing L-861E Stake Mounted Runway Threshold Light, Relocated --per Each

END OF ITEM SS-301

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ITEM SS-310 AIRPORT LIGHTING SYSTEMS

DESCRIPTION

310-1.1 This item shall consist of furnishing and installing airport runway and taxiway edge lighting systems and retroreflective markers, in accordance with this specification, the referenced specifications and drawings, and applicable advisory circulars. The system shall be installed at the locations and in accordance with the dimensions, design and details shown on the plans. This work shall include the furnishing of all equipment, materials, services and incidentals necessary to place it in operating condition as a completed unit to the satisfaction of the Engineer.

310-1.2 Additional details pertaining to the lighting system covered in this item are contained in the advisory circular, AC 150/5340-30, Design and Installation Details for Airport Visual Aids.

310-1.3 The Contractor shall maintain current copies of all referenced and applicable advisory circulars on the job site. The Contractor is responsible to make known to the Engineer any conflict between plans and specifications that he observes or of which he is made aware.

EQUIPMENT AND MATERIALS

310-2.1 GENERAL.

a. Airport lighting equipment and materials shall meet the requirements outlined in Item SS-300.

310-2.2 LIGHT FIXTURES. Airfield lights shall be supplied with all features and accessories including isolation transformers, light stakes, safety ground rods, and incidentals required for a complete installation as defined in these Specifications and as shown on the plans.

a. Medium Intensity Runway Lights (MIRL):

(1) Runway threshold and end elevated lights shall be L-861E, 45 Watt/6.6A lamp, bidirectional lens as shown on Plans and as approved. Lamp and fixture type shall match that existing on the field.

310-2.3 LAMPS. Lamps for elevated edge lights shall match the type already present on the runway.

310-2.4 SPARE EQUIPMENT INCLUDING LAMPS. Provide 2 spare lamps of each type installed for lights. Spare lamps shall not be measured for separate payment but shall be considered subsidiary to the light fixture and guidance sign pay items.

310-2.5 ELEVATED RETROREFLECTIVE MARKERS. Elevated retroreflective markers shall be L-853 retroreflective markers, meeting the criteria set forth in the latest AC 150/5345-39, Runway and Taxiway Retroreflective Markers.

Elevated retroreflective markers shall be Type II, elevated markers for edge marking. Post shall be neutral color with reflective material of color stated below. Overall height of the retroreflective marker shall 18” above grade with the reflective material covering the top 14” of the marker. Retroreflective markers shall be flexible. Frangible mounted rigid retroreflective markers will not be accepted. Markers shall have stake at the center of retroreflective material. Offset stakes will not be accepted. Provide soil anchor for unpaved areas and provide base mounts for paved areas.

a. Taxiway edge markers shall be solid blue in color.

Exact options shall be specified by the Owner and Engineer during shop drawing submittal review.

Provide 10 percent spare markers of each type installed. Spare markers shall not be measured for separate payment but shall be considered subsidiary to the respective marker pay items.

310-2.6 ISOLATION TRANSFORMERS. New isolation transformers shall be Type L-830 and have a wattage rating suitable for the wattage of the fixture and sign lamps. The transformer shall be listed in FAA Circular AC 150/5345-47.

Provide 2 spare isolation transformers of each type installed for lights. Spare transformers shall not be measured for separate payment but shall be considered subsidiary to the respective light fixture or sign pay items.

CONSTRUCTION METHODS

310-3.1 GENERAL. The installation and testing details for the lighting system shall be as specified in the applicable advisory circulars.

310-3.2 PLACING LIGHTS. All equipment shall be installed at locations indicated in the plans. Lights shall be laid out by locating the two control points by station as indicated on the plans and measuring the indicated individual separation distances. Lights shall be located within 1 inch +/- longitudinally and 0.5 inches +/- transversely of the location indicated unless deviation is approved by the Engineer. The Contractor is responsible for all surveying and measurement which is required to accurately position and aim the light fixtures. Fixture height shall be as indicated on the Drawings.

310-3.3 RETROREFLECTIVE MARKER INSTALLATION. All markers shall be installed at locations indicated in the plans.

The markers shall be installed as shown on the plans or as directed by the Engineer. Care shall be taken in placing the markers to avoid irregularities in vertical or horizontal alignment. Markers improperly installed, as determined by the Engineer, shall be removed and re-installed, as directed by the Engineer. No payment will be made for the removal and reinstallation of markers improperly installed.

310-3.4 TRANSFORMER INSTALLATION. The transformer for base mounted fixtures shall be placed inside the base. The transformer for stake mounted fixtures shall be located uniformly as shown on the plans. The primary cable connections shall be made with L-823 connectors as described in Item L-108 and have 3 feet of slack cable. The secondary leads connected to the lamp leads by means of a disconnecting plug and receptacle provided with the unit, and this joint shall not be taped. The secondary joint shall be fastened with a holding ring provided for this purpose.

310-3.5 UNIT ASSEMBLY. All electrical equipment, including edge lights, and other visual aid units shall be assembled in accordance with the manufacturer's installation procedures. Anti-seize compound shall be used on all screws, nuts, and threads, including frangible coupling threads. If coated bolts are used (ceramic metallic/fluoropolymer coating), then do not apply anti-seize compound.

Coordinate recommended torque values with the light fixture manufacturer, light base can manufacturer, stainless steel bolts and hardware used, and exact anti-seize compound used, in order to prevent light base thread damage. Utilize a dial-type torque wrench for accuracy and to prevent over-tightening bolts. Never use impact wrenches/drills when removing or installing bolts.

310-3.6 IDENTIFICATION NUMBERS. An identifying number shall be assigned to each light and sign in accordance with the plans or as approved by the Engineer and Owner. This number shall be imprinted with

reflective black with 1/2" letters on a non-corrosive metal disc 2" minimum diameter and attached to the pavement side of the fixture with a metal screw.

310-3.7 TESTING. The installation shall be tested in operation as a completed unit prior to acceptance. Tests shall include taking megger and voltage readings as outlined in Item SS-300 and Item L-108. Testing equipment shall be furnished by the Contractor. Refer to Item L-108 for additional test requirements.

Tests shall be conducted in the presence of the Engineer and shall be to his/her satisfaction.

All installations shall be fully tested by continuous operation for not less than 24 hours as completed systems prior to acceptance. These tests shall include the functioning of each control not less than 10 times.

Equipment and materials covered by FAA Advisory Circulars are referred to by item numbers and approved equipment is listed within the AC 150/5345-53 Airport Lighting Equipment Certification Program's monthly Addendum, which contains a complete and updated listing of the certified equipment and manufacturers. The Contractor shall provide and install new certified equipment that works reliably and efficiently with the existing equipment to remain in service. The Contractor shall provide any additional accessories and/or appurtenances required to provide fully functional electrical systems to the satisfaction of the Owner and Engineer, at no additional cost to the Owner.

The Contractor shall ascertain that all lighting system components furnished (including FAA certified and approved equipment) are compatible in all respects with each other and the remainder of the new and existing systems. Any non-compatible components furnished by the Contractor shall be replaced at no additional cost to the Owner with a similar unit that is approved by the Engineer and compatible with the remainder of the airport lighting system.

METHOD OF MEASUREMENT

310-4.1 The quantity of lights, complete with isolation transformers, stakes, connectors, safety grounds rods, and appurtenances, to be measured under this item shall be the number of each installed, as completed units in place, ready for operation, and accepted by the Engineer. See section on Spare Equipment for information on spare fixture requirements.

310-4.2 The quantity of elevated retroreflective markers, complete with stakes, epoxy kits for surface mounting, connectors and appurtenances, to be measured under this item shall be the number of each type installed, as completed units in place, ready for operation, and accepted by the Engineer.

BASIS OF PAYMENT

310-5.1 Payment will be made at the contract unit price for each complete item, measured as provided above, and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item to the satisfaction of the Engineer.

Payment will be made under:

Item SS-310-5.1	L-853 Elevated Stake Mounted Retroreflective Marker, Installed in Turf -- per Each
Item SS-310-5.2	L-853 Elevated Surface Mounted Retroreflective Marker, Installed on Pavement -- per Each
Item SS-310-5.3	L-861E Stake Mounted Runway Threshold Light, Installed -- per Each

END OF ITEM SS-310

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ITEM L-108 UNDERGROUND POWER CABLE FOR AIRPORTS

DESCRIPTION

108-1.1 This item shall consist of furnishing and installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. Also included are the installation of counterpoise wires, ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the Engineer. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities. ~~Requirements and payment for trenching and backfilling for the installation of underground conduit and duct banks is in Item L-110, Airport Underground Electrical Duct Banks and Conduits.~~

EQUIPMENT AND MATERIALS

108-2.1 GENERAL.

a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification, when requested by the Engineer.

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the Engineer) and replaced with materials that comply with these specifications at the Contractor's cost.

d. All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

e. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the plans and specifications. The Engineer reserves the right to reject any and all equipment, materials, or procedures that do not meet the system design and the standards and codes, specified in this document.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall be responsible to maintain a minimum insulation resistance per AC 150/5340-26B, Maintenance Airport Visual aid Facilities, Table 5-1 and paragraph

5.1.3.1, with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period.

108-2.2 CABLE. Underground cable for airfield lighting facilities (runway and taxiway lights and signs) shall conform to the requirements of AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits latest edition. Conductors for use on 6.6 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #8 American wire gauge AWG), L-824 Type C, 5,000 volts, nonshielded, with cross-linked polyethylene insulation. ~~Conductors for use on 20 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #6 AWG, L-824 Type C, 5,000 volts, nonshielded, with cross-linked polyethylene insulation.~~ L-824 conductors for use on the L-830 secondary of airfield lighting series circuits shall be sized in accordance with the manufacturer's recommendations. All other conductors shall comply with FAA and National Electric Code (NEC) requirements. Conductor sizes noted above shall not apply to leads furnished by manufacturers on airfield lighting transformers and fixtures.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Federal Specification J-C-30 and shall be type THWN-2, 75°C. Conductors for parallel (voltage) circuits shall be sized and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600 volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600 volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #12 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtails, cable step-down adapters, cable step-up adapters, terminal blocks and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided.

Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Document.

108-2.3 BARE COPPER WIRE (COUNTERPOISE, BARE COPPER WIRE GROUND AND GROUND RODS). Wire for counterpoise or ground installations for airfield lighting systems shall be No. 6 AWG bare solid copper wire for counterpoise and/or No. 6 AWG insulated stranded for ground wire per ASTM B3 and ASTM B8, and shall be bare copper wire per ASTM B33. See AC 150/5340-30 for additional details about counterpoise and ground wire types and installation. For voltage powered circuits, the equipment ground conductor shall be minimum No. 6 AWG, 600V rated, Type XHHW insulated, green color, stranded copper equipment ground conductor.

Ground rods shall be copper-clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than 10 feet (2.54 m) long and 3/4 inch (19 mm) in diameter.

108-2.4 CABLE CONNECTIONS. In-line connections or splices of underground primary cables shall be of the type called for on the plans, and shall be one of the types listed below. No separate payment will be made for cable connections.

a. The Cast Splice. A cast splice, employing a plastic mold and using epoxy resin equivalent to that manufactured by 3M™ Company, "Scotchcast" Kit No. 82-B, or as manufactured by Hysol® Corporation, "Hyseal Epoxy Splice" Kit No. E1135, or an approved equivalent, used for potting the splice is acceptable.

b. The Field-Attached Plug-In Splice. Figure 3 of AC 150/5345-26, Specification for L-823 Plug and Receptacle, Cable Connectors, employing connector kits, is acceptable for field attachment to single conductor cable. It shall be the Contractor's responsibility to determine the outside diameter of the cable to be spliced and to furnish appropriately sized connector kits and/or adapters and heat shrink tubing with integral sealant.

c. The Factory-Molded Plug-in Splice. Specification for L-823 Connectors, Factory-Molded to Individual Conductors, is acceptable.

d. The Taped or Heat-Shrink Splice. Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape is acceptable. The rubber tape should meet the requirements of ASTM D4388 and the plastic tape should comply with Military Specification MIL-I-24391 or Commercial Item Description A-A-55809. Heat shrinkable tubing shall be heavy-wall, self-sealing tubing rated for the voltage of the wire being spliced and suitable for direct-buried installations. The tubing shall be factory coated with a thermoplastic adhesive-sealant that will adhere to the insulation of the wire being spliced forming a moisture- and dirt-proof seal. Additionally, heat shrinkable tubing for multi-conductor cables, shielded cables, and armored cables shall be factory kits that are designed for the application. Heat shrinkable tubing and tubing kits shall be manufactured by Tyco Electronics/ Raychem Corporation, Energy Division, or approved equivalent.

In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.

All connections of counterpoise, grounding conductors and ground rods shall be made by the exothermic process or approved equivalent, except that a light base ground clamp connector shall be used for attachment to the light base. See AC 150/5340-30 for additional information about methods of attaching a ground to a galvanized light base. All exothermic connections shall be made per the manufacturer's recommendations and listings.

108-2.5 SPLICER QUALIFICATIONS. Every airfield lighting cable splicer shall be qualified in making airport cable splices and terminations on cables rated at or above 5,000 volts AC. The Contractor shall submit to the Engineer proof of the qualifications of each proposed cable splicer for the airport cable type and voltage level to be worked on. Cable splicing/terminating personnel shall have a minimum of three (3) years continuous experience in terminating/splicing medium voltage cable.

108-2.6 CONCRETE. Concrete for cable markers shall be per Specification Item P-610, Structural Portland Cement Concrete.

108-2.7 FLOWABLE BACKFILL. Flowable material used to backfill trenches for power cable trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

108-2.8 CABLE IDENTIFICATION TAGS. Cable identification tags shall be made from a non-corrosive material with the circuit identification stamped or etched onto the tag. The tags shall be of the type as detailed on the plans.

108-2.9 TAPE. Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch (38 mm) wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch (50 mm) wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

108-2.10 ELECTRICAL COATING. Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

108-2.11 EXISTING CIRCUITS. Whenever the scope of work requires connection to an existing circuit, the circuit's insulation resistance shall be tested, in the presence of the Engineer. The test shall be

performed per this item and prior to any activity that will affect the respective circuit. The Contractor shall record the results on forms acceptable to the Engineer. When the work affecting the circuit is complete, the circuit's insulation resistance shall be checked again, in the presence of the Engineer. The Contractor shall record the results on forms acceptable to the Engineer. The second reading shall be equal to or greater than the first reading or the Contractor shall make the necessary repairs to the circuit to bring the second reading above the first reading. All repair costs including a complete replacement of the L-823 connectors, L-830 transformers and L-824 cable, if necessary, shall be borne by the Contractor. All test results shall be submitted in the Operation and Maintenance (O&M) Manual.

108-2.12 DETECTABLE WARNING TAPE. Plastic, detectable, American Wood Preservers Association (AWPA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend magnetic tape shall be polyethylene film with a metalized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

108-3.1 GENERAL. The Contractor shall install the specified cable at the approximate locations indicated on the plans. Unless otherwise shown on the plans, all cable required to cross under pavements expected to carry aircraft loads shall be installed in concrete encased duct banks. Wherever possible, cable shall be run without splices, from connection to connection.

Cable connections between lights will be permitted only at the light locations for connecting the underground cable to the primary leads of the individual isolation transformers. The Contractor shall be responsible for providing cable in continuous lengths for home runs or other long cable runs without connections unless otherwise authorized in writing by the Engineer or shown on the plans.

In addition to connectors being installed at individual isolation transformers, L-823 cable connectors for maintenance and test points shall be installed at locations shown on the plans. Cable circuit identification markers shall be installed on both sides of the L-823 connectors installed or at least once in each access point where L-823 connectors are not installed.

Provide not less than 3 feet (1 m) of cable slack on each side of all connections, isolation transformers, light units, and at points where cable is connected to field equipment. Where provisions must be made for testing or for future above grade connections, provide enough slack to allow the cable to be extended at least one foot (30 cm) vertically above the top of the access structure. This requirement also applies where primary cable passes through empty light bases, junction boxes, and access structures to allow for future connections, or as designated by the Engineer.

Primary airfield lighting cables installed shall have cable circuit identification markers attached on both sides of each L-823 connector and on each airport lighting cable entering or leaving cable access points, such as manholes, hand holes, pull boxes, junction boxes, etc. Markers shall be of sufficient length for imprinting the cable circuit identification legend on one line, using letters not less than 1/4 inch (6 mm) in size. The cable circuit identification shall match the circuits noted on the construction plans.

108-3.2 INSTALLATION IN DUCT BANKS OR CONDUITS. This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected and that any potential interference is avoided.

Duct banks or conduits shall be installed as a separate item per Item L-110, Airport Underground Electrical Duct Banks and Conduit. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the Engineer of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the Engineer prior to any cable installation. If required by the Engineer, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the Engineer. Cable pull tensions shall be recorded by the Contractor and reviewed by the Engineer. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the Engineer, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

108-3.3 INSTALLATION OF DIRECT-BURIED CABLE IN TRENCHES. Unless otherwise specified, the Contractor shall not use a cable plow for installing the cable. Cable shall be unreeled uniformly in place alongside or in the trench and shall be carefully placed along the bottom of the trench. The cable shall not be unreeled and pulled into the trench from one end. Slack cable sufficient to provide strain relief shall be placed in the trench in a series of S curves. Sharp bends or kinks in the cable shall not be permitted.

Where cables must cross over each other, a minimum of 3 inches (75 mm) vertical displacement shall be provided with the topmost cable depth at or below the minimum required depth below finished grade.

a. Trenching. Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored. Trenches for cables may be excavated manually or with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of surface is disturbed. Graders

shall not be used to excavate the trench with their blades. The bottom surface of trenches shall be essentially smooth and free from coarse aggregate. Unless otherwise specified, cable trenches shall be excavated to a minimum depth of 18 inches (0.5 m) below finished grade per NEC Table 300.5, except as follows:

(1) When off the airport or crossing under a roadway or driveway, the minimum depth shall be 36 inches (91 cm) unless otherwise specified.

(2) Minimum cable depth when crossing under a railroad track, shall be 42 inches (1 m) unless otherwise specified.

Dewatering necessary for cable installation, erosion and turbidity control, per Federal, state, and local requirements is incidental to its respective pay items as part of Item L-108. The cost of all excavation regardless of type of material encountered, shall be included in the unit price bid for the L-108 Item.

The Contractor shall excavate all cable trenches to a width not less than 6 inches (150 mm). Unless otherwise specified on the plans, all cables in the same location and running in the same general direction shall be installed in the same trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required cable depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4 inch (6 mm) sieve. Flowable backfill material may alternatively be used. The Contractor shall ascertain the type of soil or rock to be excavated before bidding. All such rock removal shall be performed *subsidiary to the respective trenching or conduit or duct bank pay item*.

Duct bank or conduit markers temporarily removed for trench excavations shall be replaced as required.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

(1) Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred.

(2) Trenching, etc., in cable areas shall then proceed, with approval of the Engineer, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair or replacement.

b. Backfilling. After the cable has been installed, the trench shall be backfilled. The first layer of backfill in the trench shall be 3 inches (75 mm) deep, loose measurement, and shall be either earth or sand containing no mineral aggregate particles that would be retained on a 1/4 inch (6 mm) sieve. This layer shall not be compacted. The second layer shall be 5 inches (125 mm) deep, loose measurement, and shall contain no particles that would be retained on a one inch (25 mm) sieve. The remaining third and subsequent layers of backfill shall not exceed 8 inches (20 cm) of loose measurement and be excavated or imported material and shall not contain stone or aggregate larger than 4 inches (100 mm) maximum diameter.

The second and subsequent layers shall be thoroughly tamped and compacted to at least the density of the adjacent undisturbed soil, and to the satisfaction of the Engineer. If necessary to obtain the desired compaction, the backfill material shall be moistened or aerated as required.

If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the compaction requirements per Item P-152 for that area shall be followed.

Trenches shall not contain pools of water during backfilling operations. The trench shall be completely backfilled and tamped level with the adjacent surface, except that when turf is to be established over the trench, the backfilling shall be stopped at an appropriate depth consistent with the type of turfing operation to be accommodated. A proper allowance for settlement shall also be provided. Any excess excavated material shall be removed and disposed of per the plans and specifications.

Underground electrical warning (caution) tape shall be installed in the trench above all direct-buried cable. Contractor shall submit a sample of the proposed warning tape for acceptance by the Engineer. If not shown on the plans, the warning tape shall be located 6 inches (150 mm) above the direct-buried cable or the counterpoise wire if present. A *3*-6 inch (*75* - 150 mm) wide polyethylene film detectable tape, with a metalized foil core, shall be installed above all direct buried cable or counterpoise. The tape shall be of the color and have a continuous legend as indicated on the plans. The tape shall be installed 8 inch (200 mm) minimum below finished grade.

c. Restoration. Following restoration of all trenching near airport movement surfaces, the Contractor shall visually inspect the area for foreign object debris (FOD) and remove any that is found. Where soil and sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by work shall be restored to its original condition. The restoration shall include the sodding as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. When trenching is through paved areas, restoration shall be equal to existing conditions and compaction shall meet the requirements of Item P-152. Restoration shall be considered incidental to the pay item of which it is a component part.

108-3.4 CABLE MARKERS FOR DIRECT-BURIED CABLE. The location of direct buried circuits shall be marked by a concrete slab marker, 2 feet (60 cm) square and 4-6 inch (10 - 15 cm) thick, extending approximately one inch (25 mm) above the surface. Each cable run from a line of lights and signs to the equipment vault shall be marked at approximately every 200 feet (61 m) along the cable run, with an additional marker at each change of direction of cable run. All other direct-buried cable shall be marked in the same manner. Cable markers shall be installed directly above the cable. The Contractor shall impress the word “CABLE” and directional arrows on each cable marking slab. The letters shall be approximately 4 inches (100 mm) high and 3 inches (75 mm) wide, with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep.

At the location of each underground cable connection, except at lighting units, or isolation transformers, or power a concrete marker slab must mark adapters placed above the connection. The Contractor shall impress the word “SPLICE” on each slab. The Contractor also shall impress additional circuit identification symbols on each slab as directed by the Engineer. All cable markers and splice markers shall be painted international orange. Paint shall be specifically manufactured for uncured exterior concrete. After placement, all cable or splice markers shall be given one coat of high-visibility aviation orange paint as approved by the Engineer. Furnishing and installation of cable markers is incidental to the respective cable pay item.

108-3.5 SPLICING. Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

a. Cast splices. These shall be made by using crimp connectors for jointing conductors. Molds shall be assembled, and the compound shall be mixed and poured per the manufacturer's instructions and to the satisfaction of the Engineer.

b. Field-attached plug-in splices. These shall be assembled per the manufacturer's instructions. These splices shall be made by plugging directly into mating connectors. In all cases the joint where the connectors come together shall be wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint.

c. Factory-molded plug-in splices. These shall be made by plugging directly into mating connectors. In all cases, the joint where the connectors come together shall be wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint.

d. Taped or heat-shrink splices. A taped splice shall be made in the following manner:

Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing for bare conductor of proper length to fit compression sleeve connector with 1/4 inch (6 mm) of bare conductor on each side of the connector. Prior to splicing, the two ends of the cable insulation shall be penciled using a tool designed specifically for this purpose and for cable size and type. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches (75 mm) on each end) is clean. After scraping wipe the entire area with a clean lint-free cloth. Do not use solvents.

Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the tape, stretching it just short of its breaking point. Throughout the rest of the splice less tension should be used. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately one inch (25 mm) over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.

Heat shrinkable tubing shall be installed following manufacturer's instructions. Direct flame heating shall not be permitted unless recommended by the manufacturer. Cable surfaces within the limits of the heat-shrink application shall be clean and free of contaminates prior to application.

Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer's recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection.

108-3.6 BARE COUNTERPOISE WIRE INSTALLATION FOR LIGHTNING PROTECTION AND GROUNDING. If shown on the plans or included in the job specifications, bare solid #6 AWG copper counterpoise wire shall be installed for lightning protection of the underground cables. The Engineer shall select one of two methods of lightning protection for the airfield lighting circuit based on the frequency of local lightning:

a. Equipotential. – may be used by the Engineer for areas that have high rates of lightning strikes. This is where the counterpoise is bonded to the light base (edge lights included) and counterpoise size is determined by the Engineer.

b. Isolation – used in areas where lightning strikes are not common. The counterpoise is not bonded to edge light fixtures, in-pavement fixtures are bonded to the counterpoise. Counterpoise size is selected by the Engineer.

Counterpoise wire shall be installed in the same trench for the entire length of buried cable, conduits and duct banks that are installed to contain airfield cables.

For raceways installed under pavement; for raceways and cables not installed adjacent to the full strength pavement edge; for fixtures installed in full strength pavement and shoulder pavement and for optional method of edge lights installed in turf (stabilized soils); and for raceways or cables adjacent to the full strength pavement edge, the counterpoise conductor shall be centered over the raceway or cable to be protected as described below.

The counterpoise conductor shall be installed no less than 8 inches (203 mm) above the raceway or cable to be protected, except as permitted below.

The minimum counterpoise conductor height above the raceway or cable to be protected shall be permitted to be adjusted subject to coordination with the airfield lighting and pavement designs.

Where raceway is installed by the directional bore, jack and bore, or other drilling method, the counterpoise conductor shall be permitted to be installed concurrently with the directional bore, jack and bore, or other drilling method raceway, external to the raceway or sleeve.

The counterpoise conductor shall be installed no more than 12 inches (305 mm) above the raceway or cable to be protected.

The counterpoise conductor height above the protected raceway(s) or cable(s) shall be calculated to ensure that the raceway or cable is within a 45-degree area of protection.

The counterpoise conductor shall be bonded to each metallic light base, mounting stake, and metallic airfield lighting component.

All metallic airfield lighting components in the field circuit on the output side of the constant current regulator (CCR) or other power source shall be bonded to the airfield lighting counterpoise system.

The counterpoise wire shall also be exothermically welded to ground rods installed as shown on the plans but not more than 500 feet (150 m) apart around the entire circuit. The counterpoise system shall be continuous and terminate at the transformer vault or at the power source. It shall be securely attached to the vault or equipment external ground ring or other made electrode-grounding system. The connections shall be made as shown on the plans and in the specifications.

If shown on the plans or in the specifications, a separate equipment (safety) ground system shall be provided in addition to the counterpoise wire using one of the following methods:

c. A ground rod installed at and securely attached to each light fixture base, mounting stake, and to all metal surfaces at junction/access structures via #6 AWG wire.

d. For parallel voltage systems only, install a #6 AWG green insulated equipment ground conductor internal to the conduit system and securely attached it to each light fixture base internal grounding lug and to all metal surfaces at junction/access structures. Dedicated ground rods shall be installed and exothermically welded to the counterpoise wires at each end of a duct bank crossing under pavement.

Where an existing airfield lighting system is being extended or modified, the new counterpoise conductors shall be interconnected to existing counterpoise conductors at each intersection of the new and existing airfield lighting counterpoise systems.

108-3.7 COUNTERPOISE INSTALLATION ABOVE MULTIPLE CONDUITS AND DUCT BANKS. Counterpoise wires shall be installed above multiple conduits/duct banks for airfield lighting cables, with the intent being to provide a complete area of protection over the airfield lighting cables. When multiple conduits and/or duct banks for airfield cable are installed in the same trench, the number and location of counterpoise wires above the conduits shall be adequate to provide a complete cone of protection measured 22-1/2 degrees each side of vertical.

Where duct banks pass under pavement to be constructed in the project, the counterpoise shall be placed above the duct bank. Reference details on the construction plans.

108-3.8 COUNTERPOISE INSTALLATION AT EXISTING DUCT BANKS. When airfield lighting cables are indicated on the plans to be routed through existing duct banks, the new counterpoise wiring shall be terminated at ground rods at each end of the existing duct bank where the cables being protected enter and exit the duct bank. The new counterpoise conductor shall be bonded to the existing counterpoise system.

108-3.9 EXOTHERMIC BONDING. Bonding of counterpoise wire shall be by the exothermic welding process. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the Engineer, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

a. All slag shall be removed from welds.

b. Using an exothermic weld to bond the counterpoise to a lug on a galvanized light base is not recommended unless the base has been specially modified. Consult the manufacturer's installation directions for proper methods of bonding copper wire to the light base. See also AC 150/5340-30 for galvanized light base exception.

c. If called for in the plans, all buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

108-3.10 TESTING. The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the Engineer. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the Engineer. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

a. Earth resistance testing methods shall be submitted to the Engineer for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the Engineer. All such testing shall be at the sole expense of the Contractor.

b. Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The Engineer shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the Engineer the following:

c. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.

d. That all affected circuits (existing and new) are free from unspecified grounds.

e. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than 500 megohms

f. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.

g. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.

h. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.

i. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the Engineer prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the Engineer. Where connecting new cable to existing cable, ground resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved “repair” procedures for items that have failed testing other than complete replacement.

METHOD OF MEASUREMENT

108-4.1 Trenching shall be measured by the linear feet (meters) of trench, including the excavation, backfill, and restoration, completed, measured as excavated, and accepted as satisfactory. When specified, separate measurement shall be made for trenches of various specified widths.

The cost of all excavation, backfill, dewatering and restoration regardless of the type of material encountered shall be included in the unit price bid for the work.

108-4.2 Cable or counterpoise wire installed in trench, duct bank or conduit shall be measured by the number of linear feet (meters) installed and grounding connectors, and trench marking tape ready for operation, and accepted as satisfactory. Separate measurement shall be made for each cable or counterpoise wire installed in trench, duct bank or conduit. The measurement for this item shall include additional quantities required for slack.

~~**108-4.3** Ground rods shall be measured by each [10-foot] section installed complete.~~

BASIS OF PAYMENT

108-5.1 Payment will be made at the contract unit price for trenching, cable and bare counterpoise wire installed in trench (direct-buried), or cable and equipment ground installed in duct bank or conduit, in place by the Contractor and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, necessary to complete this item.

Payment will be made under:

Item L-108-5.1	Trenching for Direct-Buried Cable, 18 Inch Minimum Depth - per Linear Foot
Item L-108-5.2	No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Trench, Duct Bank or Conduit - per Linear Foot
Item L-108-5.3	No. 6 AWG, Solid, Bare Counterpoise Wire, Installed in Trench, Above the Duct Bank or Conduit, Including Ground Rods and Ground Connectors - per Linear Foot

MATERIAL REQUIREMENTS

AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-53	Airport Lighting Equipment Certification Program
Commercial Item Description A-A-59544	Cable and Wire, Electrical (Power, Fixed Installation)
Commercial Item Description A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic
ASTM B3	Standard Specification for Soft or Annealed Copper Wire
ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D33	*Tinned Soft of Annealed Copper Wire for Electrical Purposes*
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes
FED SPEC J-C-30	Cable and Wire, Electrical (Power, Fixed Installation)

MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive
MIL-P-21035	*Paint High Zinc Duct Content, Galvanizing Repair*

REFERENCE DOCUMENTS

NFPA-70	National Electrical Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems
MIL-S-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System

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ITEM P-620 RUNWAY AND TAXIWAY PAINTING

DESCRIPTION

620-1.1 This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer. The terms “paint” and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification.

MATERIALS

620-2.1 MATERIALS ACCEPTANCE. The Contractor shall furnish manufacturer’s certified test reports for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers 55 gallons or smaller for inspection by the Engineer. Material shall not be loaded into the equipment until inspected by the Engineer.

620-2.2 MARKING MATERIALS. Paint shall be waterborne in accordance with the requirements of paragraph 620-2.2. Paint shall be furnished in **White 37925, Yellow 33538, and Black 37038** in accordance with Federal Standard No. 595.

a. WATERBORNE. Paint shall meet the requirements of Federal Specification TT-P-1952E, Type I. The non- volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

620-2.3 REFLECTIVE MEDIA. Glass beads shall meet the requirements for **Type I, Gradation A**. Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Paint Color	Glass Beads, Type I, Gradation A
White	See Table 1.
Yellow	See Table 1.
Red	See Table 1 and Note
Pink	See Table 1 and Note
Black	Not used
Green	Not used

CONSTRUCTION METHODS

620-3.1 WEATHER LIMITATIONS. The painting shall be performed only when the surface is dry and when the surface temperature is at least 45°F and rising and the pavement surface temperature is at least 5°F above the dew point or meets the manufacturer’s recommendations. **Painting operations shall be discontinued when the surface temperature exceeds the Manufacturer’s maximum recommendation. Markings shall not be applied when the pavement temperature is greater than 130°F.** Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns.

620-3.2 EQUIPMENT. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray.

620-3.3 PREPARATION OF SURFACE. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material that would reduce the bond between the paint and the pavement. The area to be painted shall be **cleaned by waterblasting** or by other methods as required to remove all contaminants without damage to the pavement surface. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the Engineer. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

At least 24 hours prior to remarking existing markings, the existing markings must be removed such that **100%** of the existing markings are removed with low (3,500-10,000 psi) waterblaster. After waterblasting, the surface shall be cleaned of all residue or debris either with sweeping or blowing with compressed air or both.

Prior to the initial application of markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer's requirements, that the application equipment is appropriate for the type of marking paint and that environmental conditions are appropriate for the material being applied. This certification along with a copy of the paint manufacturer's surface preparation and application requirements must be submitted and approved by the Engineer prior to the initial application of markings.

620-3.4 LAYOUT OF MARKINGS. The proposed markings shall be laid out in advance of the paint application. ~~The locations of markings to receive glass beads shall be shown on the plans~~. *Glass beads shall be applied to all final pavement markings.*

620-3.5 APPLICATION. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the Engineer. The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and marking dimensions and spacings shall be within the following tolerances:

Dimension and Spacing	Tolerance
36 inch or less	±1/2 inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted. A period of **28 days** shall elapse between placement of a bituminous surface course or seal coat and application of the paint.

Prior to the initial application of markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer's requirements, that the application equipment is appropriate for the marking paint and that environmental conditions are appropriate for the material being

applied. This certification along with a copy of the paint manufactures application and surface preparation requirements must be submitted to the Engineer prior to the initial application of markings.

620-3.6 TEST STRIP. Prior to the full application of airfield markings, the Contractor shall produce a test strip in the presence of the Engineer. The test strip shall include the application of a minimum of 5 gallons of paint and application of 35 lbs of Type I/50 lbs of Type III glass beads. The test strip shall be used to establish thickness/darkness standard for all markings. The test strip shall cover no more than the maximum area prescribed in Table 1 (e.g., for 5 gallons of waterborne paint shall cover no more than 575 square feet).

TABLE 1. APPLICATION RATES FOR PAINT AND GLASS BEADS
(See Note Regarding Red and Pink Paint)

Paint Type	Paint Square feet per gallon, ft^2/gal	Glass Beads, Type I, Gradation A Pounds per gallon of paint—lb./gal.
Waterborne Type I or II	115 ft^2/gal max	7 lb./gal. minimum

Note: The glass bead application rate for Red and Pink paint shall be reduced by 2 lb/gal for Type I and Type IV beads. Type III beads shall not be applied to Red or Pink paint.

Glass beads shall be distributed upon the marked areas ~~at the locations shown on the plans~~ to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment should be performed.

All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

620-3.9 REMOVAL OF EXISTING MARKINGS. *The existing pavement markings shown on the plans to be removed shall be removed without damaging the existing pavement. The markings shall be removed through the use of high-pressure water or other methods approved by the Engineer before removal operations begin. For areas to be repainted, the existing painted surface shall be cleaned by high-pressure water blasting or sand blasting, as required, to remove all foreign material which would reduce the bond between the new paint and the old paint.*

METHOD OF MEASUREMENT

620-4.1 The quantity of runway and taxiway markings to be paid for shall be **the number of square feet of painting** performed in accordance with the specifications and accepted by the Engineer.

620-4.2 *Pavement marking removal shall be measured by number of square feet of markings removed in accordance with the specifications and accepted by the Engineer.*

Item P-620-5.2 Pavement Marking Removal – per square foot

BASIS OF PAYMENT

620-5.1 Payment shall be made at the respective contract **price per square foot** for runway and taxiway painting and for reflective media**.** This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

620-5.2 *Payment shall be made at the contract unit price per square foot for paint removal. The price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.*

Payment will be made under:

Item P-620-5.1	Runway and Taxiway Painting per square foot
Item P-620-5.2	Runway and Taxiway Paint Removal per square foot

TESTING REQUIREMENTS

ASTM C371	Standard Test Method for Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders
ASTM D92	Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
ASTM D711	Standard Test Method for No-Pick-Up Time of Traffic Paint
ASTM D968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1652	Standard Test Method for Epoxy Content of Epoxy Resins
ASTM D2074	Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D7585	Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments
ASTM E1710	Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM E2302	Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

MATERIAL REQUIREMENTS

ASTM D476	Standard Classification for Dry Pigmentary Titanium Dioxide Products

40 CFR Part 60, Appendix A-7, Method 24

Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

29 CFR Part 1910.1200 Hazard Communication

FED SPEC TT-B-1325D
Beads (Glass Spheres) Retro-Reflective

American Association of State Highway and Transportation Officials (AASHTO) M247 Standard Specification for Glass Beads Used in Pavement Markings

FED SPEC TT-P-1952E
Paint, Traffic and Airfield Marking, Waterborne

Commercial Item Description A-A-2886B
Paint, Traffic, Solvent Based

FED STD 595 Colors used in Government Procurement

AC 150/5340-1 Standards for Airport Markings

END OF ITEM P-620

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ITEM T-904 SODDING

DESCRIPTION

904-1.1 This item shall consist of furnishing, hauling, and placing approved live sod on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the Engineer.

MATERIALS

904-2.1 SOD. Sod furnished by the Contractor shall have a good cover of living or growing grass. This shall be interpreted to include grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period. All sod shall be obtained from areas where the soil is reasonably fertile and contains a high percentage of loamy topsoil. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots, or other materials that might be detrimental to the development of the sod or to future maintenance. At least 70% of the plants in the cut sod shall be composed of the species stated in the *Standard Specifications, Section 230 – Sodding* ~~special provisions~~, and any vegetation more than 6 inches in height shall be mowed to a height of 3 inches or less before sod is lifted. Sod, including the soil containing the roots and the plant growth showing above, shall be cut uniformly to a thickness not less than that stated in the~~ special provisions.~~ *Standard Specifications, Section 230 – Sodding. Type of sod shall be of the type specified in the Standard Specifications, Section 230 – Sodding.*

904-2.2 FERTILIZER. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified, and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

- **a.** A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- **b.** A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or
- **c.** A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be **10-20-10** commercial fertilizer and shall be spread at the rate of **800 lbs/acre**.

904-2.3 WATER. The water shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass. It shall be subject to the approval of the Engineer prior to use.

904-2.4 SOIL FOR REPAIRS. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the Engineer before being placed.

CONSTRUCTION METHODS

904-3.1 GENERAL. Areas to be solid, strip, or spot sodded shall be shown on the plans. Areas requiring special ground surface preparation such as tilling and those areas in a satisfactory condition that are to remain undisturbed shall also be shown on the plans.

Suitable equipment necessary for proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand, in good condition, and shall be approved by the

Engineer before the various operations are started. The Contractor shall demonstrate to the Engineer before starting the various operations that the application of required materials will be made at the specified rates.

904-3.2 PREPARING THE GROUND SURFACE. After grading of areas has been completed and before applying fertilizer and limestone, areas to be sodded shall be raked or otherwise cleared of stones larger than 2 inches in any diameter, sticks, stumps, and other debris which might interfere with sodding, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes occurs after grading of areas and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

904-3.3 APPLYING FERTILIZER AND GROUND LIMESTONE. Following ground surface preparation, fertilizer shall be uniformly spread at a rate which will provide not less than the minimum quantity of each fertilizer ingredient, as stated in the special provisions. If use of ground limestone is required, it shall then be spread at a rate that will provide not less than the minimum quantity stated in the special provisions. These materials shall be incorporated into the soil to a depth of not less than 2 inches by discing, raking, or other suitable methods. Any stones larger than 2 inches in any diameter, large clods, roots, and other litter brought to the surface by this operation shall be removed.

904-3.4 OBTAINING AND DELIVERING SOD. After inspection and approval of the source of sod by the Engineer, the sod shall be cut with approved sod cutters to such a thickness that after it has been transported and placed on the prepared bed, but before it has been compacted, it shall have a uniform thickness of not less than 2 inches. Sod sections or strips shall be cut in uniform widths, not less than 10 inches, and in lengths of not less than 18 inches, but of such length as may be readily lifted without breaking, tearing, or loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside. The Contractor may be required to mow high grass before cutting sod.

The sod shall be transplanted within 24 hours from the time it is stripped, unless circumstances beyond the Contractor's control make storing necessary. In such cases, sod shall be stacked, kept moist, and protected from exposure to the air and sun and shall be kept from freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Where the soil is too dry, permission to cut sod may be granted only after it has been watered sufficiently to moisten the soil to the depth the sod is to be cut.

904-3.5 LAYING SOD. Sodding shall be performed only during the seasons when satisfactory results can be expected. Frozen sod shall not be used and sod shall not be placed upon frozen soil. Sod may be transplanted during periods of drought with the approval of the Engineer, provided the sod bed is watered to moisten the soil to a depth of at least 4 inches immediately prior to laying the sod.

The sod shall be moist and shall be placed on a moist earth bed. Pitch forks shall not be used to handle sod, and dumping from vehicles shall not be permitted. The sod shall be carefully placed by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface, and ensure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod may be displaced during sodding operations, the workmen, when replacing it, shall work from ladders or treaded planks to prevent further displacement. Screened soil of good quality shall be used to fill all cracks between sods. The quantity of the fill soil shall not cause smothering of the grass. Where the grades are such that the flow of water will be from paved surfaces across sodded areas, the surface of the soil in the sod after compaction shall be set approximately one inch below the pavement edge. Where the flow will be over the sodded areas and onto the paved surfaces around manholes and inlets, the surface of the soil in the sod after compaction shall be placed flush with pavement edges.

On slopes steeper than one (1) vertical to 2-1/2 horizontal and in v-shaped or flat-bottom ditches or gutters, the sod shall be pegged with wooden pegs not less than 12 inches in length and have a cross-sectional area of not less than 3/4 sq inch. The pegs shall be driven flush with the surface of the sod.

904-3.6 WATERING. Adequate water and watering equipment must be on hand before sodding begins, and sod shall be kept moist until it has become established and its continued growth assured. In all cases, watering shall be done in a manner that will avoid erosion from the application of excessive quantities and will avoid damage to the finished surface.

904-3.7 ESTABLISHING TURF.

a. General. The Contractor shall provide general care for the sodded areas as soon as the sod has been laid and shall continue until final inspection and acceptance of the work.

b. Protection. All sodded areas shall be protected against traffic or other use by warning signs or barricades approved by the Engineer.

c. Mowing. The Contractor shall mow the sodded areas with approved mowing equipment, depending upon climatic and growth conditions and the needs for mowing specific areas. In the event that weeds or other undesirable vegetation are permitted to grow to such an extent that, either cut or uncut, they threaten to smother the sodded species, they shall be mowed and the clippings raked and removed from the area.

904-3.8 REPAIRING. When the surface has become gullied or otherwise damaged during the period covered by this contract, the affected areas shall be repaired to re-establish the grade and the condition of the soil, as directed by the Engineer, and shall then be sodded as specified in paragraph 904-3.5.

METHOD OF MEASUREMENT

904-4.1 This item shall ~~be measured on the basis of the area in square yards of the surface covered with sod and accepted.~~ not be measured for individual payment but will be considered subsidiary to electrical items of work

BASIS OF PAYMENT

904-5.1 This item will ~~be paid for on the basis of the contract unit price per square yard for sodding, which price shall be full compensation for all labor, equipment, material, staking, and incidentals necessary to satisfactorily complete the items as specified.~~ not be paid for individually but will be considered subsidiary to electrical items of work

~~Payment will be made under:~~

~~Item T-904-5.1 Sodding—per square yard~~

MATERIAL REQUIREMENTS

ASTM C 602 Standard Specification for Agricultural Liming Materials

END OF ITEM T-904

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